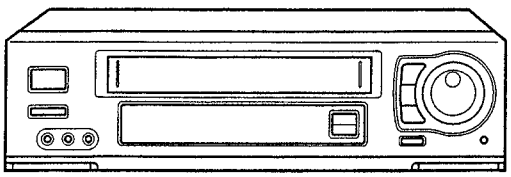
aiwa

aiwa SERVICE

HV-FX5000

SERVICE MANUAL



STEREO VIDEO
CASSETTE RECORDER

• BASIC TAPE MECHANISM: OVD-5 • TYPE: U

SPECIFICATIONS

GENERAL

Video recording system	Rotary 2 head helical scanning system
Video head	Double azimuth 4 head
Video signal	NTSC color signal, 525 lines, 60 fields
Recording/playback time	SP: 3 hours with T-180 tape LP: 6 hours with T-180 tape SLP: 9 hours with T-180 tape
Fast forward/rewind time	Less than 150 sec. with T-120 tape
Tape speed	SP: 33.35 mm/sec. LP: 16.67 mm/sec. SLP: 11.12 mm/sec.
Tape width	12-65 mm
Usable cassettes	VHS video cassettes
Timer recording	8 programs within 1 month
Channel coverage	VHF: Channel 2 to 13 UHF: Channel 14 to 69 CATV: 4A, A-W, W+1 to W+84, A-5 to A-1
RF output	NTSC M
RF modulator	VHF channel 3 or 4 (switchable)
RF output level	66 dBμ, 75 ohms
Video input level	1.0 Vp-p, 75 ohms, unbalanced
Video output level	1.0 Vp-p, 75 ohms, unbalanced
Horizontal resolution	220 lines (at SP mode)
Video S/N	50 dB (at SP mode, weighted)
Audio track	3 tracks (Hi-Fi sound 2 tracks, Normal sound 1 track)
Hi-Fi Dynamic range	More than 90 dB
Channel separation	More than 60 dB
Hi-Fi Wow and Flutter	Less than 0.01% Wrms (nominal)
Audio input level	-8 dBs, 50 Kohms
Audio output level	-6 dBs, less than 1 Kohms
Audio frequency response	normal: 120 Hz - 10 kHz (at SP mode) Hi-Fi: 20 Hz - 20 kHz
Audio S/N	normal: More than 42 dB (at SP mode, weighted) Hi-Fi: More than 65 dB (weighted)
Operating temperature	5°C to 40°C (41°F to 104°F)
Power requirements	120 V AC, 60 Hz
Power consumption	17 watts
Dimensions	360 (W) × 92 (H) × 273 (D) mm (14 1/4 × 3 5/8 × 10 3/4 in.)
Weight	Approx. 4.0 kg (8.8 lbs.)

● **Design and specifications are subject to change without notice.**

S/M Code No. 09-977-197-30O

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SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Remove the Angle Deck in the direction of arrow (B).
4. Disconnect the following connector: (CP651 3 pins and CP652 4 pin).
5. Unlock the 2 supports ②.
6. Remove the Front Cabinet in the direction of arrow (C).
7. Remove the 6 screws ③ and remove the Operation 1 PCB.
8. Remove the screw ④ and remove the LED PCB.
9. Remove the 4 screws ⑤ and remove the Operation 2 PCB.

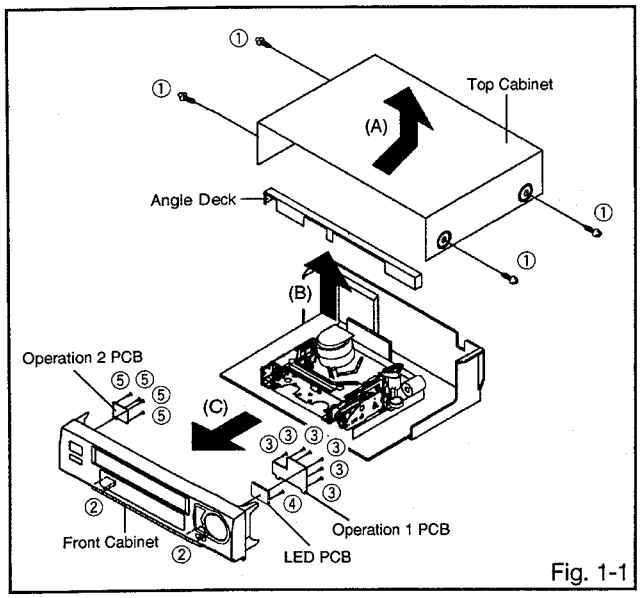


Fig. 1-1

1-2: LOCATION OF P.C. BOARDS (Refer to Fig. 1-2)

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

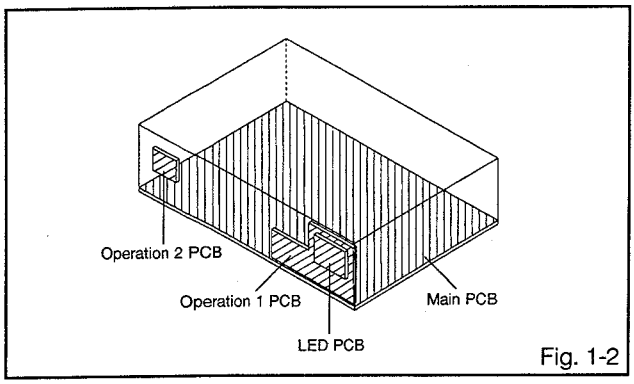


Fig. 1-2

1-3: BOTTOM CHASSIS (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Unlock the 2 supports ②.
3. Remove the Bottom Chassis in the direction of arrow.

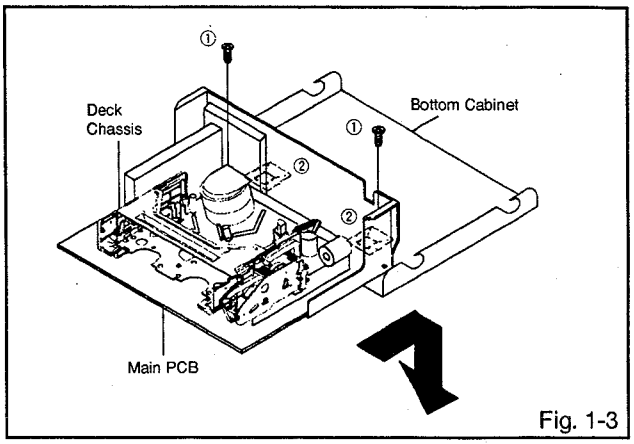


Fig. 1-3

1-4: FLAP (Refer to Fig. 1-4)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

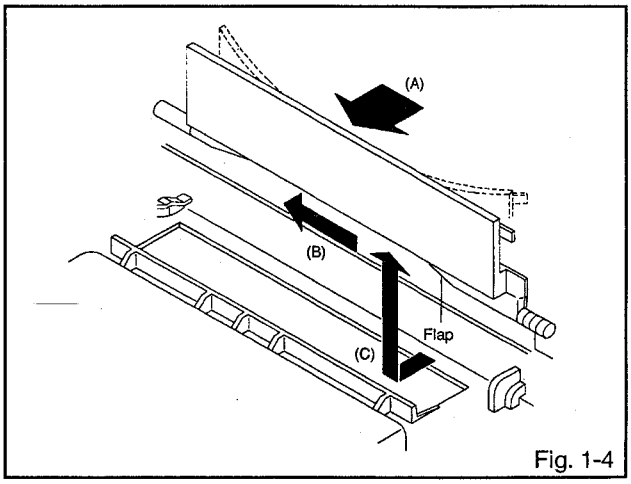


Fig. 1-4

1-5: DECK CHASSIS (Refer to Fig. 1-5)

1. Remove the 3 screws ①.
2. Remove the screw ②.
3. Remove the 3 screws ③ and Case Shield Ass'y.
4. Remove the Deck Chassis in the direction of arrow.

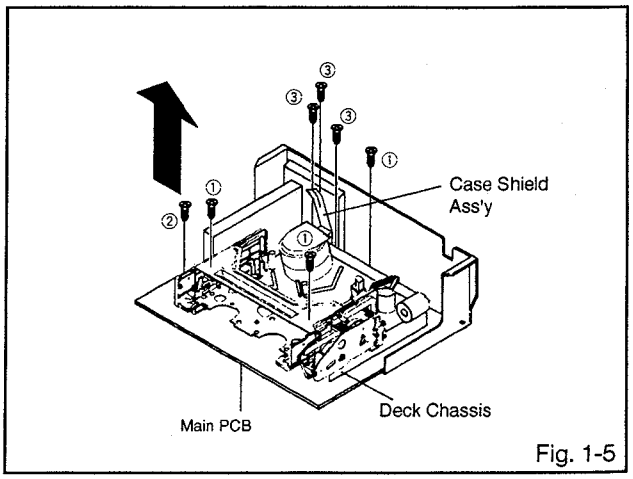


Fig. 1-5

DISASSEMBLY INSTRUCTIONS

1-6: MAIN PCB AND BACK PANEL (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the 2 screws ②.
3. Remove the Main PCB in the direction of arrow.

NOTE

AC Cord must be removed from the fitting in the back panel before the Main PCB can be removed.

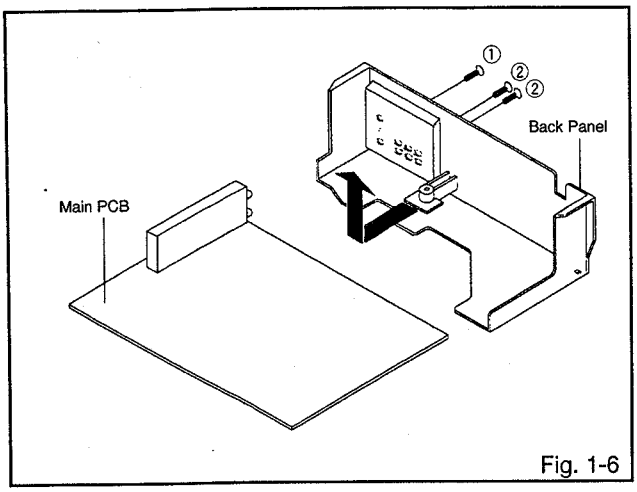


Fig. 1-6

1-7: CHASSIS SECTION AND FRONT LOADING UNIT 7 (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove the Front Loading Unit 7 in the direction of arrow (A).

NOTE

When installing the Front Loading Unit 7, align the timing marks and pull the Cassette Holder Ass'y in the direction of arrow (B).

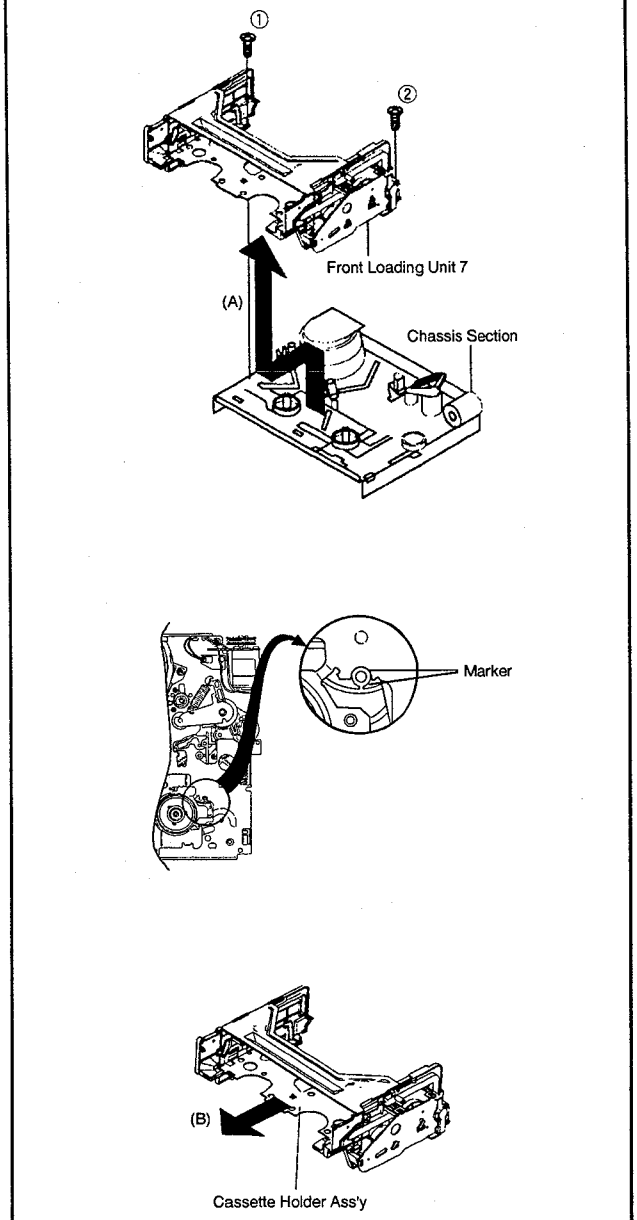


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: LINK GEAR (R) / CLUTCH GEAR (Refer to Fig. 2-1)

1. Unlock the support ①.
2. Remove the BOT Sensor Cover and BOT Reflector.
3. Unlock the 3 supports ②.
4. Remove the Side Bracket R2 and Spring Earth.
5. Remove the Flap Lever, Link Gear (R) , Cam Gear Ass'y and BOT Lever.

NOTE

When installing the Link Ass'y and Link Gear (R), align the timing Marks.

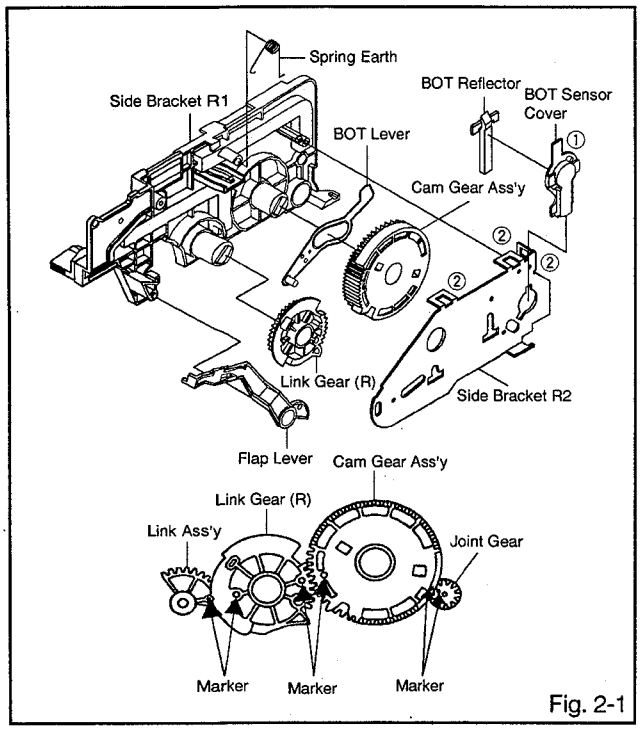


Fig. 2-1

2-2: TOP BRACKET / TAPE PIECE GUIDE (Refer to Fig. 2-2)

1. Unlock the 4 supports ①.
2. Remove the Top Bracket.
3. Remove the Side Bracket R1 and Side Bracket L.
4. Unlock the support ②.
5. Remove the Joint Gear.
6. Remove the Bracket R Spring.

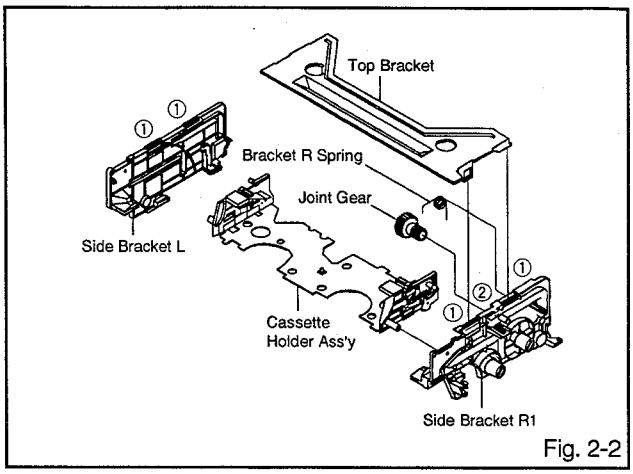


Fig. 2-2

2-3: LINK ASS'Y (Refer to Fig. 2-3)

1. After removing in the direction (A) of Link Ass'y, remove the Link Ass'y in the direction (B).

NOTE

Install the (B) first, then install the (A).

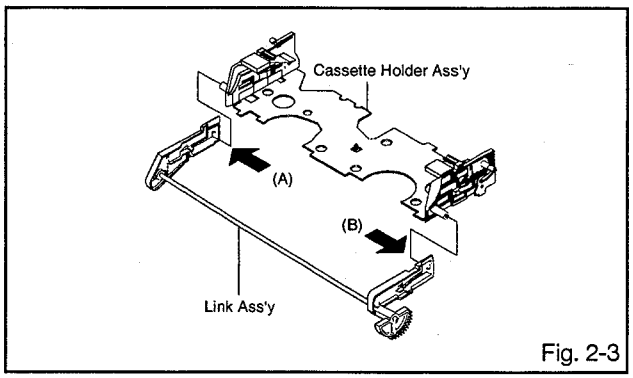


Fig. 2-3

2-4: CASSETTE SIDE R (Refer to Fig. 2-4)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side R.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker R.

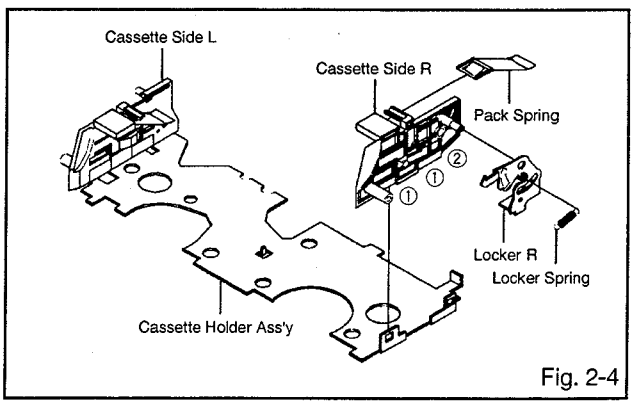


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

2-5: CASSETTE SIDE L (Refer to Fig. 2-5)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side L.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock the support ②.
6. Remove the Locker L.

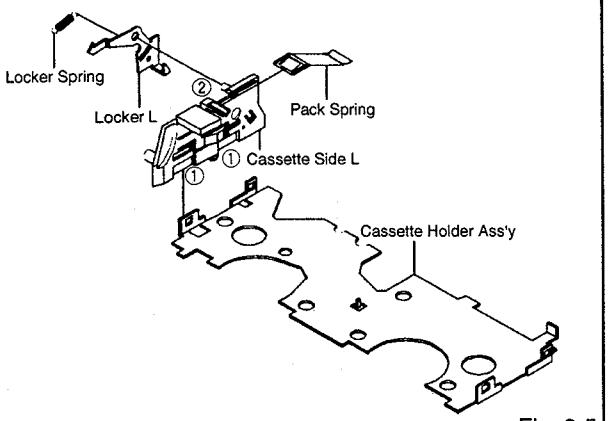


Fig. 2-5

2-6: BRAKE BRACKET (Refer to Fig. 2-6)

1. Remove the Main Brake Spring, S-S Brake Spring, Joint Arm Spring and T-S Brake Spring.
2. Remove the 2 screws ①.
3. Remove the screw ②.
4. Remove the Brake Bracket.
5. Remove the Sub Brake S, Sub Brake T, Main Brake S Ass'y and Main Brake T Ass'y.
6. Remove the Joint Arm.
7. Remove the Reflector LED 2.

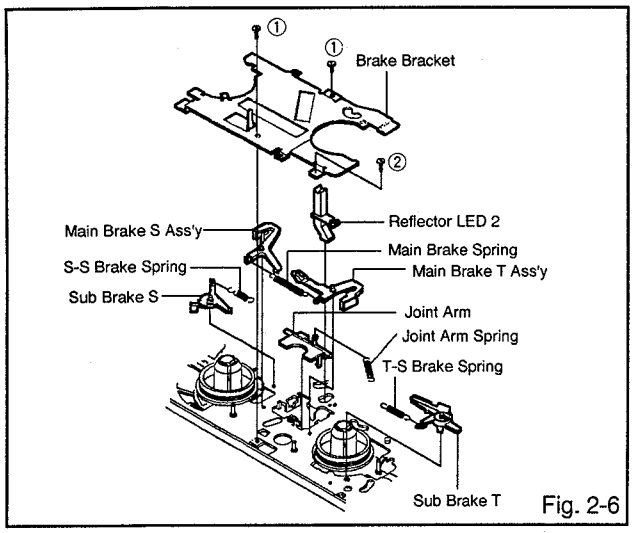


Fig. 2-6

2-7: TENSION BAND (Refer to Fig. 2-7)

1. Remove the Tension Arm Spring 1.
2. Remove the Tension Arm Spring 2.
3. Remove the Tension Adjust.
4. Remove the Tension Arm Ass'y.
5. Remove the Tension Band Ass'y.
6. Remove the Tension Lever 2 Ass'y.

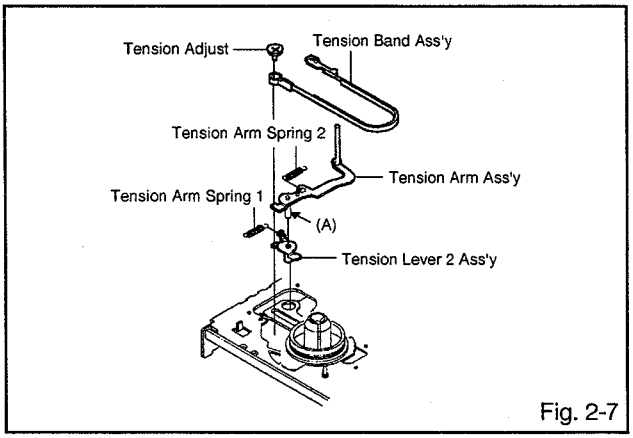


Fig. 2-7

NOTE

1. Install the Tension Band Ass'y without twisting it.
2. Turbine Oil the area marked with A in **Fig. 2-7.**

2-8: REEL DISK (Refer to Fig. 2-8)

1. Remove the Reel Disk S and Reel Disk T.
2. Remove the 2 polyslider washers.

NOTES

1. Installation of Reel Disk after performing step 1, 2 and 3 in section 2-7 of DISASSEMBLY INSTRUCTIONS.
2. The Height Adjustment washers are sometimes attached to the back of the Reel Disk.
3. Clean the Reel Disk Shaft and put in height adjusting washers.
4. Be careful not to damage the Tension Band Ass'y at the time of removal and installation.
5. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
6. After oiling the Reel Disk Shaft, install the new Reel Disk S and Reel Disk T again.
7. After installation, adjust the height of the Reel Disk. **(Refer to item 1-1 of MECHANICAL ADJUSTMENTS)**
8. After installation, adjust and confirm the tension post position. **(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)**

DISASSEMBLY INSTRUCTIONS

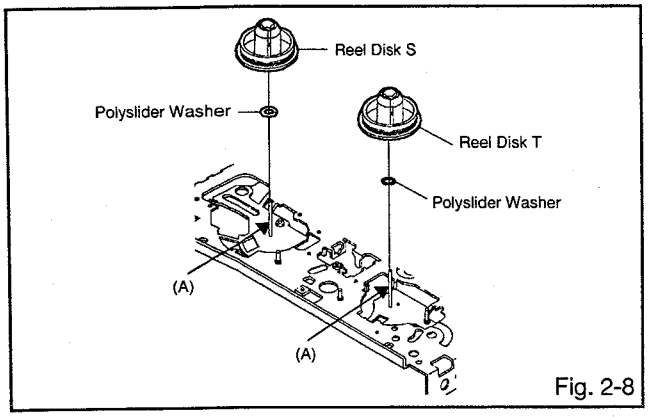


Fig. 2-8

2-9: PINCH ROLLER / CASSETTE OPENER (Refer to Fig. 2-9)

1. Unlock the support ①.
2. Remove the Pinch Roller.
3. Remove the screw ②.
4. Unlock the 2 supports ③.
5. Remove the Cassette Opener.
6. Remove the Spring P5 and Arm P5 Ass'y.
7. Remove the Cam Gear and Cam Pinch Roller.
8. Remove the polyslider washer and Cam P5.

NOTES

1. Do not touch the Pinch Roller. (Use gloves.)
2. When installing the Cam P5, Cam Pinch Roller and Cam Gear, align the timing marks.

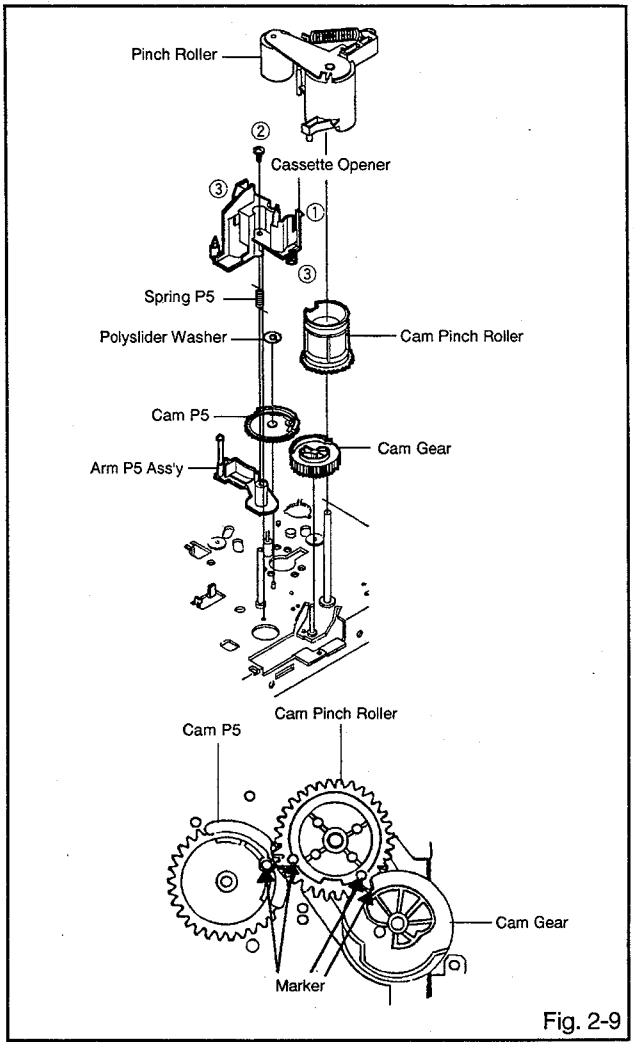


Fig. 2-9

2-10: AUDIO CONTROL HEAD (Refer to Fig. 2-10)

1. Remove the 3 screws ①.
2. Remove the 3 Audio Control Head Springs.
3. Remove the Audio Control Head.

NOTES

1. Do not touch the head by any means when replacing the Audio Control Head. (Use gloves.)
2. After replacement, confirm the following adjustments.
   a. MECHANICAL ADJUSTMENTS: ITEM 2-2
   b. MECHANICAL ADJUSTMENTS: ITEM 2-3

DISASSEMBLY INSTRUCTIONS

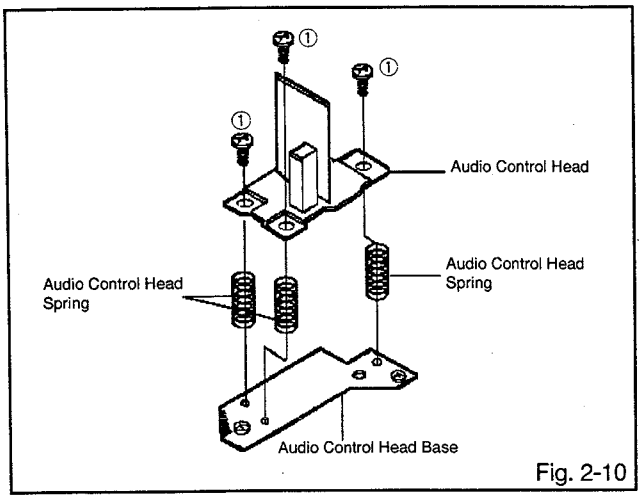


Fig. 2-10

2-11: CYLINDER UNIT (Refer to Fig. 2-11)

1. Remove the Joint Screw, then remove the Azimuth Spring.
2. Remove the 2 screws ①, then remove the Polyslider Washer and Cylinder Unit from the Main Chassis.

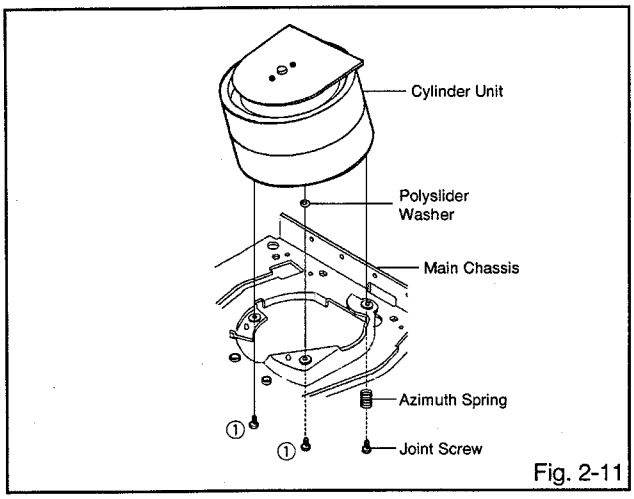


Fig. 2-11

2-12: PLATE BOTTOM (Refer to Fig. 2-12)

1. Remove the Capstan Belt.
2. Remove the 2 screws ①.
3. Remove the 3 screws ②.
4. Remove the Mode Switch.
5. Remove the Tension Lever Spring.
6. Remove the Plate Bottom.

NOTE

When installing the Mode Switch, align the timing position.

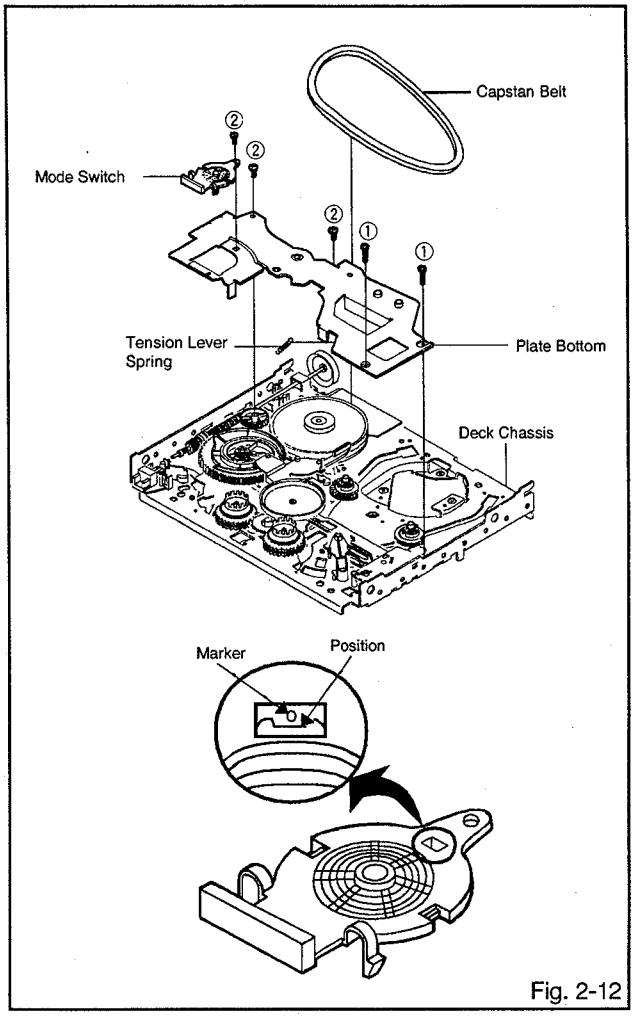


Fig. 2-12

2-13: CENTER PULLEY (Refer to Fig. 2-13)

1. Remove the polyslider washer ①.
2. Remove the Center Pulley.
3. Remove the polyslider washer ②.
4. Remove the Center Pulley Spring.
5. Remove the Idler Arm Ass'y.
6. Remove the 2 polyslider washers ③.
7. Remove the Clutch Gear T Ass'y and Clutch Gear S Ass'y.

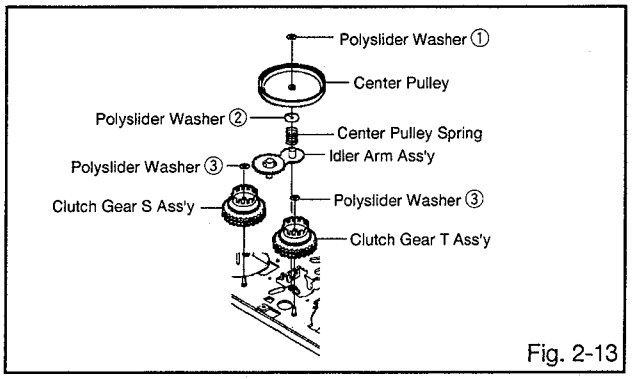


Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: MAIN CAM (Refer to Fig. 2-14)

1. Remove the Loading Lever.
2. Remove the Main Brake Lever.
3. Remove the Capstan Brake Spring.
4. Remove the Capstan Brake Ass'y.
5. Remove the Main Rod Spring.
6. Remove the Tension Holder.
7. Remove the Tension Lever.
8. Remove the Main Cam.
9. Remove the Middle Gear.
10. Remove the Main Rod Ass'y.

NOTES

1. When installing the Main Rod Ass'y, install side (B) first, then install side (A).
2. When installing the Loading Lever, align the timing marks.

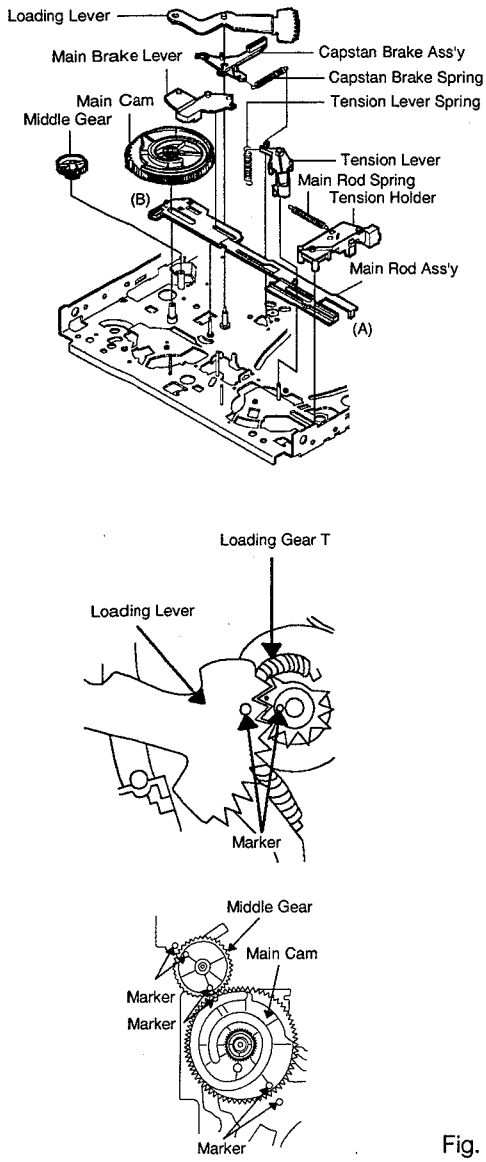


Fig. 2-14

2-15: CAPSTAN DD UNIT (Refer to Fig. 2-15)

1. Remove the 3 screws ①.
2. Remove the Capstan DD Unit.

NOTE

Use the specified screw to hold the Capstan DD Unit.

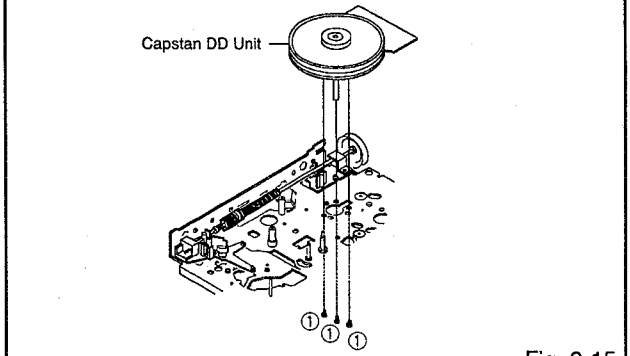


Fig. 2-15

2-16: INCLINED T ASS'Y / INCLINED S ASS'Y (Refer to Fig. 2-16)

1. Remove the 2 Slider Loadings.
2. Remove the Inclined T Ass'y and Inclined S Ass'y.
3. Remove the Loading Gear T Ass'y.
4. Remove the Loading Gear S Ass'y.

NOTE

When installing the Inclined T Ass'y and Inclined S Ass'y, align the timing marks.

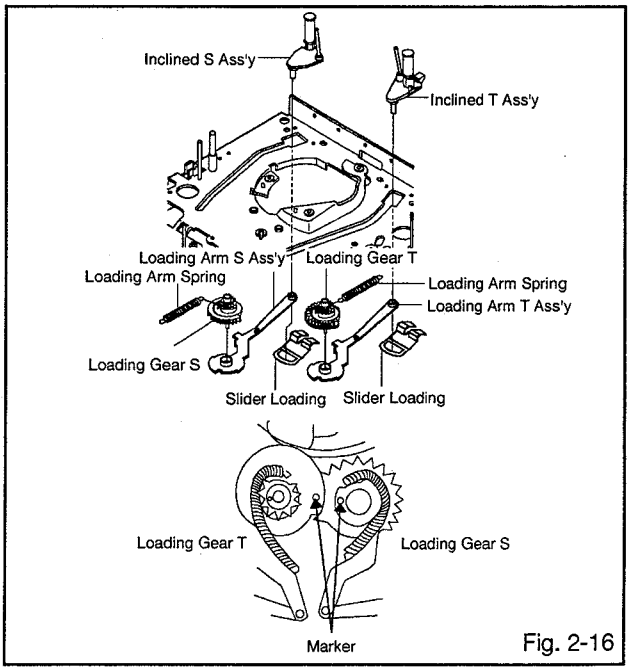


Fig. 2-16

KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mech State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head	■	■	■	■	■	
Loading Motor Belt		■		●		Clean the rubber, and parts which the rubber touches.
Reel Belt		■		●		
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■ ●	■	■ ●	■ ●	Clean the Head.

● : Replace ■ : Clean

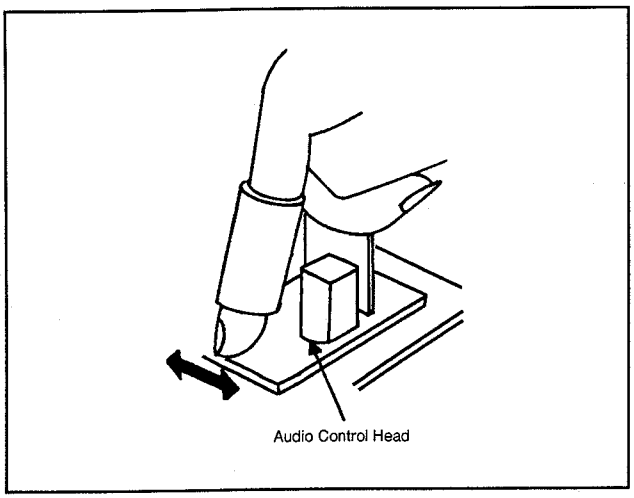
CLEANING

NOTE

- After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below)**



2. TAPE RUNNING SYSTEM

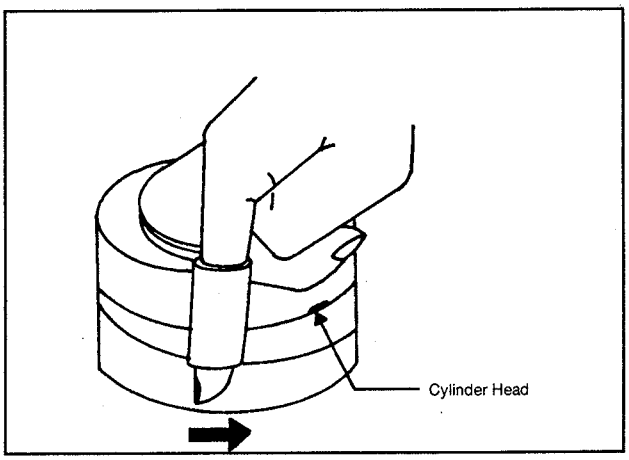
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below)**

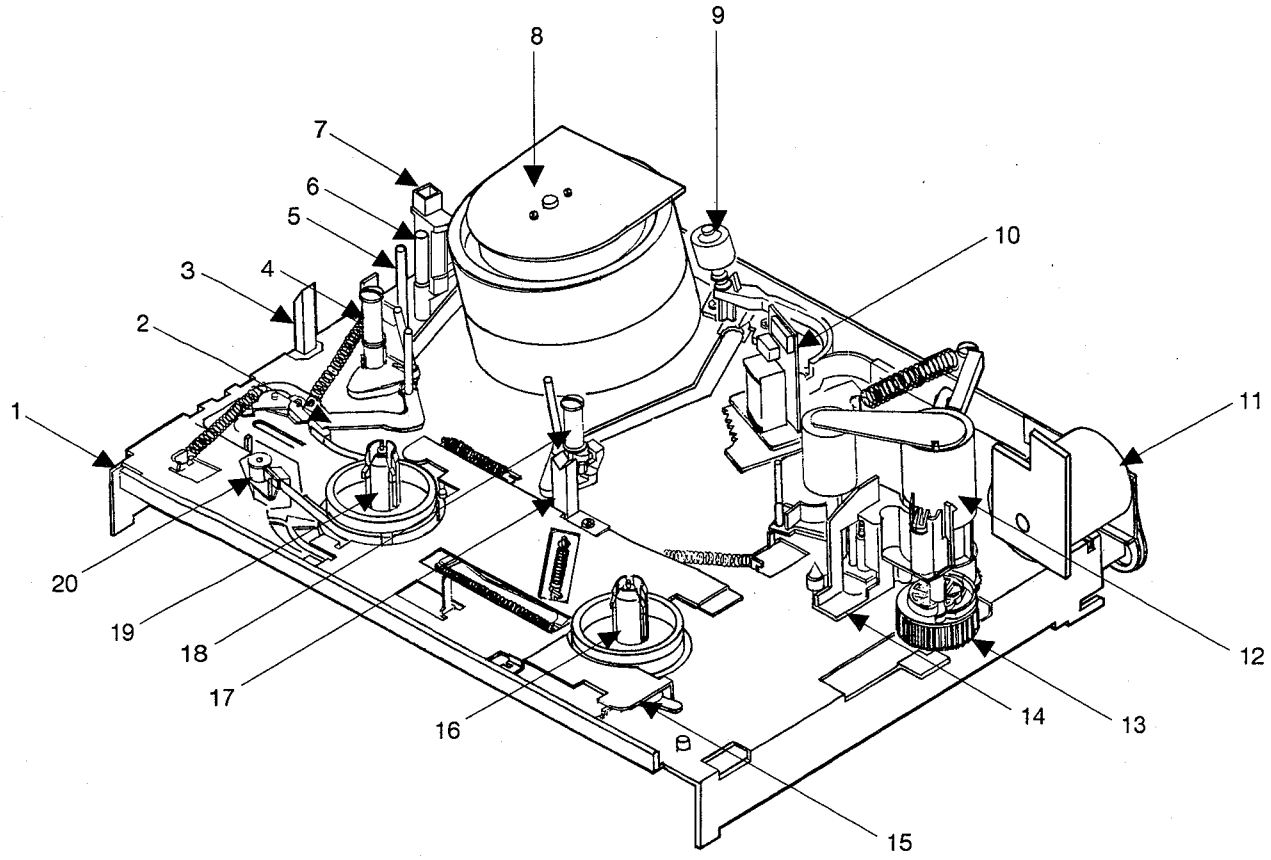
NOTE

Do not exert force against the cylinder head. Do not move the chamois up or down since this can damage the head. Always use a piece of chamois for cleaning.



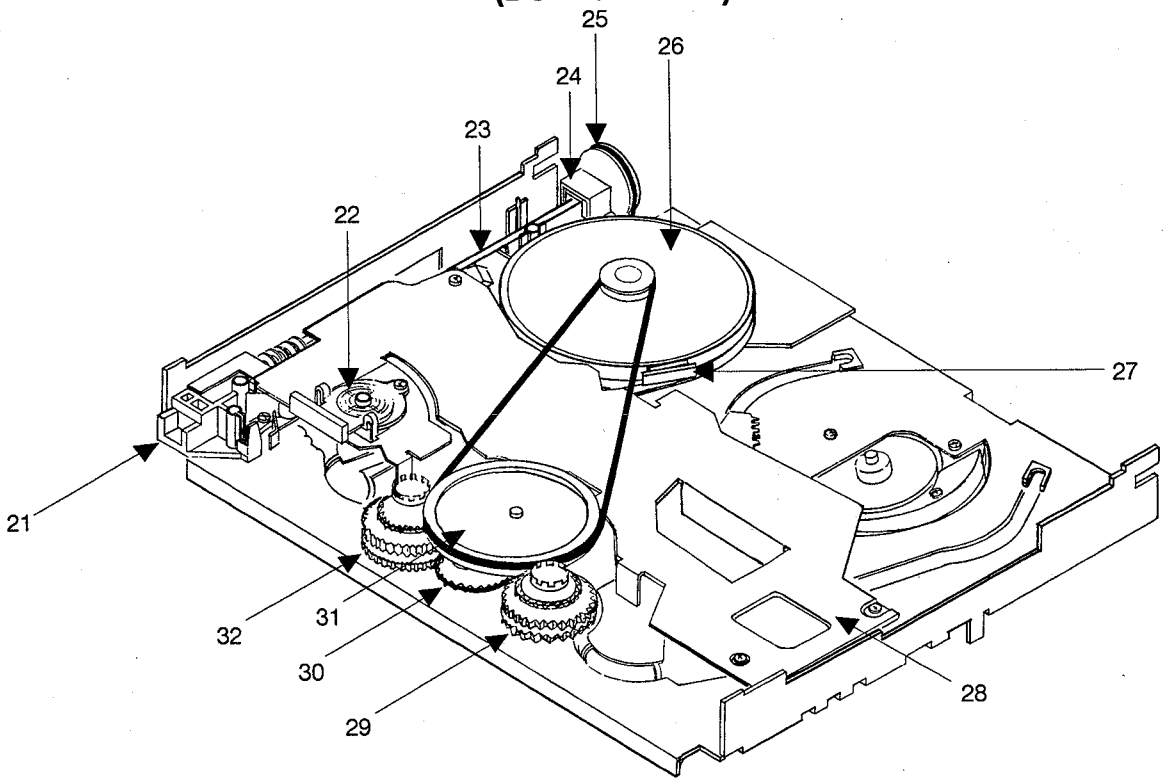
DECK PARTS LOCATIONS

(TOP VIEW)



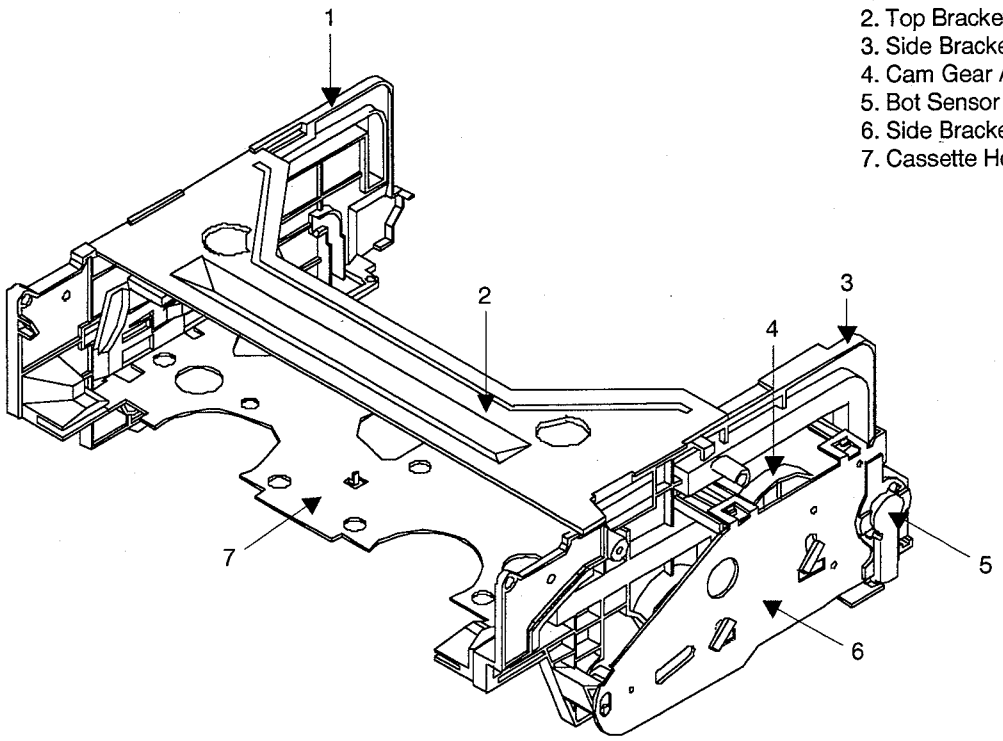
1. Main Chassis
2. Tension Arm Ass'y
3. EOT Reflector
4. Guide Roller S Ass'y
5. P0 Post
6. P1 Post
7. FE Head
8. Cylinder Unit
9. Auto Head Cleaning
10. Audio/Control Head
11. Loading Motor Ass'y
12. Pinch Roller Block
13. Cam Gear
14. Cassette Opener
15. Brake Bracket
16. Reel
17. LED Reflector
18. Guide Roller T Ass'y
19. Reel
20. Tension Band Ass'y

DECK PARTS LOCATIONS
(BOTTOM VIEW)



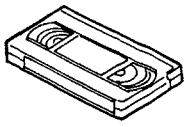
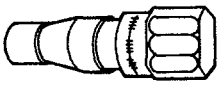
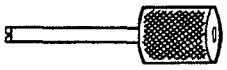
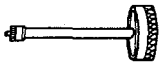
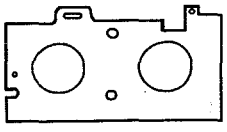
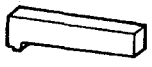
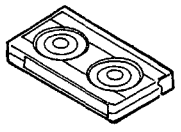
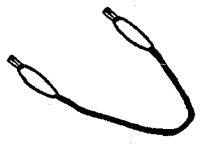
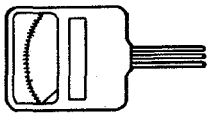
21. Worm Bracket F Ass'y
22. Mode Switch
23. Worm Ass'y
24. Worm Bracket R Ass'y
25. Loading Motor Belt
26. Capstan DD Unit
27. Capstan Brake Ass'y
28. Bottom Plate
29. Clutch Gear S Ass'y
30. Idler Arm Ass'y
31. Center Pulley
32. Clutch Gear T Ass'y

(FRONT LOADING UNIT 7)



1. Side Bracket L
2. Top Bracket Ass'y
3. Side Bracket R Ass'y
4. Cam Gear Ass'y
5. Bot Sensor Cover
6. Side Bracket R2
7. Cassette Holder Ass'y

SERVICING FIXTURES AND TOOLS

VHS Alignment Tape JG001 (TTV-N2) JG001A (TTV-N12) 	JG002B Adapter JG002F Dial Torque Gauge (60~600gr/cm) JG002G (100~1200gr/cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 	JG153 X Value Adjustment Screwdriver 
JG022 Master Plane 	JG024 Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 	JG154 Cable Part No. SJ-G15-400-000 
Tentelometer 			

Part No.	Remarks
JG001	Stair Steps, 7KHz
JG001A	Color Bar, 1KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque (Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG153	X-Value Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG100A	Playback Back Tension Torque
JG154	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (Refer to MAJOR COMPONENT LOCATION GUIDE)
2. The EOT, BOT and Reel Sensor do not work at this moment.
3. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.

TO CHECK INITIAL SETTING

NOTE: If there is an error in the data, the unit may indicate malfunction.

INSTRUCTIONS

1. Turn on the POWER and press both FF key and CH UP key on the set simultaneously for more than 2 seconds. The Initial Set Mode indicator will appear and the Address will blink. **(Refer to Fig. 1)**
2. Press the SET +/- button on the remote control to modify the address and check the data of each addresses are correct. **(Refer to Table 1)**
3. After checking, turn off the Power.

(If the wrong data is input)

4. Press the SET +/- button on the remote control to set to the address of the wrong data, then press the ENTER button. The data will bink. **(Refer to Fig. 1)**
5. Press the SET +/- button on the remote control to set to the correct data, then press the ENTER button. **(Refer to Table 1)**
6. Repeat the above steps 4 and 5 and input the data into the each Address.
7. After the data input, turn off the Power.

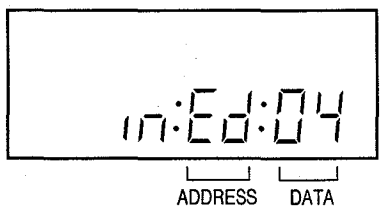


Fig. 1

ADDRESS	INI F0	INI F1	INI F2	INI F3	INI F4	INI F5	INI F6	INI F7
DATA	DF	0C	00	E0	00	00	44	44

Table 1

VCR TEST TAPE INTERCHANGEABILITY TABLE

There are two types of the new alignment tape CH-1B (for NTSC) and CH-2 (for PAL). On each tape four signals (1) - (4) are recorded for the times and in the order shown below.

(1) : 8min. → (2) : 2min. → (3) : 5min. → (4) : 5min.

The TTV-MP1 (for M-PAL), TTV-MS1 (for MESECAM) and TTV-S1 (for SECAM) alignment tapes have the same contents as the previous tapes.

Method	Now in use TYPE		New TYPE		Application
	Model	Contents※1	Model	Contents※1	
NTSC	TTV-N1	NTSC, Color, 1kHz, SP	CH-1B(2)	NTSC, Stairsteps, 1kHz, SP	PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-N1E	NTSC, Color, 1kHz, EP	CH-1B(4) ※2	NTSC, Color, 1kHz, EP	Switching position ADJ.
	TTV-N2	NTSC, Stairsteps, 7kHz, SP	CH-1B(1)	NTSC, Stairsteps, 7kHz, SP	Head ACE Azimuth ADJ.
	TTV-N12 (SCV-1998)	NTSC, Color, 1kHz, SP	CH-1B(4)	NTSC, Color, 1kHz, EP	FM envelope ADJ. X-Value ADJ.
	TTV-N7A	NTSC, Stairsteps, 1kHz, SP, HiFi 400Hz	CH-1B(3)	NTSC, Color, No sound SP, HiFi 400Hz	HiFi Audio PB Level ADJ.
PAL	TTV-P1	PAL, Color, 1kHz, SP	CH-2(2) ※3	PAL, Stairsteps, 1kHz, SP	Switching position ADJ. PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-P1L	PAL, Color, 1kHz, LP	CH-2(4)	PAL, Color, 1kHz, LP	Switching position. (LP Model) FM Envelope ADJ. (LP Model) X-Value ADJ. (LP Model)
	TTV-P2	PAL, Stairsteps, 6kHz, SP	CH-2(1)	PAL, Stairsteps, 6kHz, SP	Head ACE Azimuth ADJ. FM Envelope ADJ. (SP Model) X-Value ADJ. (SP Model)
	TTV-P7	PAL, Stairsteps, 1kHZ, SP, HiFi, 1kHz	CH-2(3)	PAL, Color, No sound SP, HiFi 400Hz	HiFi Audio PB Level ADJ.
	TTV-P16	PAL, Color, 400Hz, SP, HiFi 1kHz	No Changed.		FM Filter ADJ.

※ 1. Described in the order of color format. Video signal. Linear audio. Tape speed and Hi-Fi audio.
※ 2. Use CH-1B (1) - (3) with models used exclusively in the SP mode.
※ 3. Use CH-2 (3) and (4) when it is necessary to observe the chroma signal.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

* Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the Front Loading Unit 7. (Do not place an object which weighs over 500g.)
* When you activate the deck without the Front Loading Unit 7, short circuit between **TP1001** and **Ground**. In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024)** on mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig **(JG024)** on the master plane and higher than "B" as shown in **Fig. 1-1-B**. If it is not, adjust to less than 7.5mm ± 0.2mm with the height adjustment washer.
4. Perform the same adjustment for other reel.

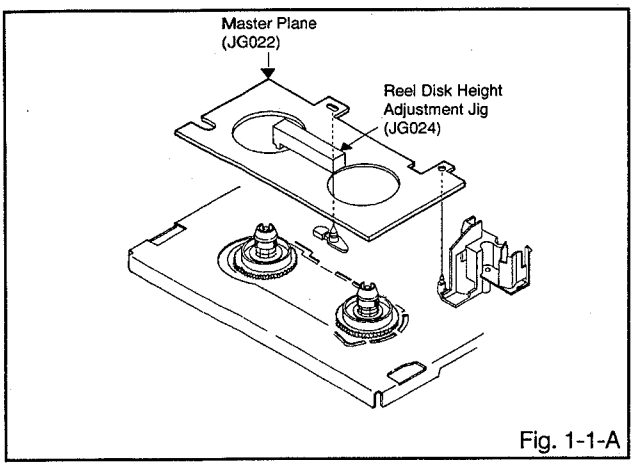


Fig. 1-1-A

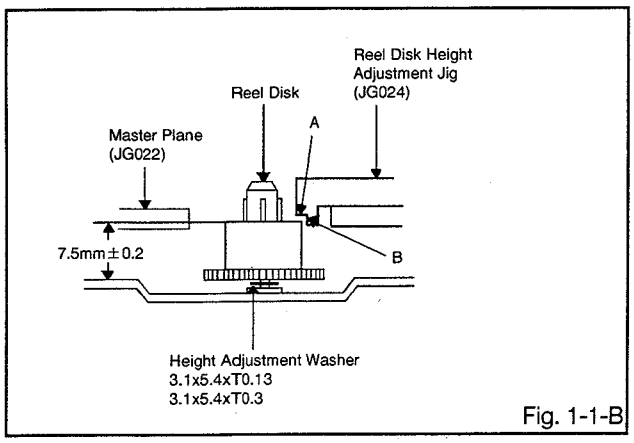


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode adjust the Tension Adjust so that the Tension Post is at the position of 0.3mm~0.5mm from the Rib. **(Refer to Fig. 1-2)**
2. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

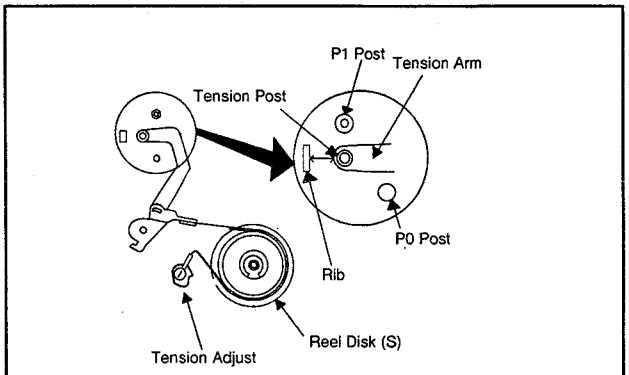


Fig. 1-2

1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm the value is within 20~27gr/cm at this time.

※ IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.

1. After adjustment, confirm and adjust the tension post position **(Refer to item 1-2)** for the tension arm, install the cassette type torque tape **(JG100A)** and set to the PLAY mode.
2. Confirm that the left hand side tension value of the torque tape is 25~38gr/cm for the standard mode tape.

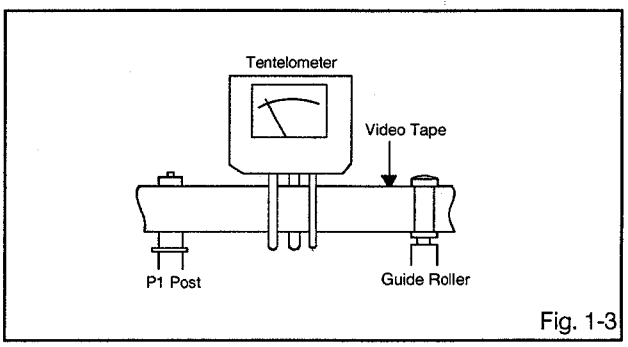


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge **(JG002G)** on take-up reel disk, and place unit in FAST FORWARD mode. **(Refer to Fig. 1-4)**
2. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge **(JG002G)** on supply reel disk, and place the unit in REWIND mode. **(Refer to Fig 1-4)**.
3. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) **(Refer to Fig. 1-4)**

1. Set to STOP mode.
2. Set the torque gauge **(JG002G)** to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gr/cm at that time.

(Supply Reel Brake) **(Refer to Fig. 1-4)**

1. Set to STOP mode.
2. Set the torque gauge **(JG002G)** to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gr/cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.

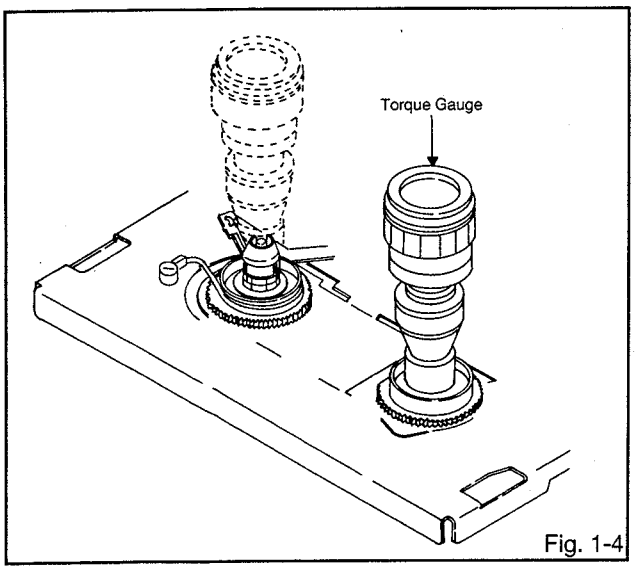


Fig. 1-4

NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Clutch ASS'Y
1-5	Idler Ass'y or Clutch ASS'Y
1-6	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

2-1: GUIDE ROLLER

1. Connect CH-1 on the oscilloscope to **TP4002 (PB Envelope** and CH-2 to **TP1002 (SW Pulse)**.
2. Set the tracking to manual center position in the following way. Hold and press the tracking auto button more than 2 seconds to set the tracking to center position.
3. Trigger with SW pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
4. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver **JG005**).
5. Press and hold the tracking control button and (at the point that the envelope waveform starts to reduce) adjust the envelope so that the A : B ratio is better than 3 : 2. **(Refer to Fig. 2-1-B)**
6. Adjust the PG shifter **(ELECTRICAL ADJUSTMENTS : ITEM 3-1)** in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. **(Refer to item 2-2)**

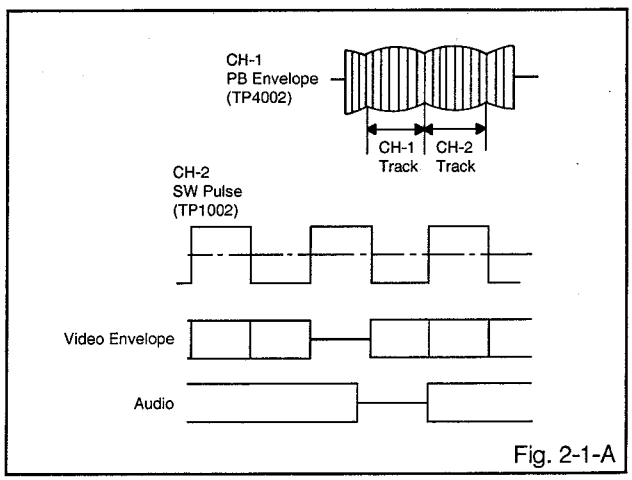


Fig. 2-1-A

MECHANICAL ADJUSTMENTS

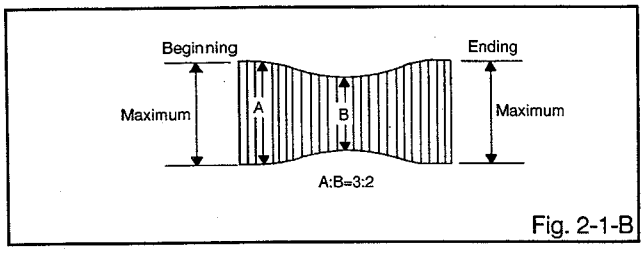


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller (R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. **(Refer to Fig. 2-2)**

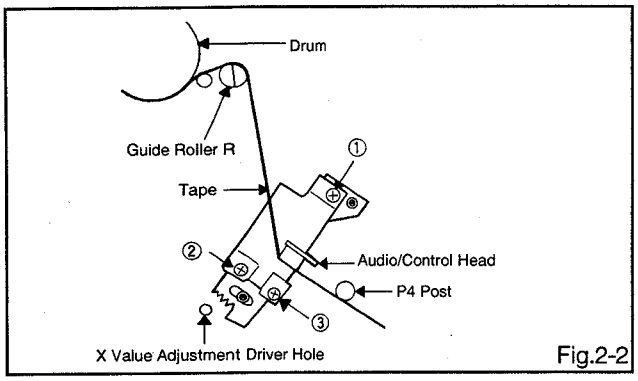


Fig.2-2

2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Playback a VHS alignment tape **(JG001)** and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the height so that the audio output becomes maximum. **(Refer to Fig. 2-2)**
3. Adjust the screw ③, **(Refer to Fig. 2-2)** until the height of the A/C head reaches the position against the tape as shown in **Fig. 2-3.**
4. When the control head height is not correct. (When you must turn the screw more than 45 degrees), Turn all of the screws ①, ② and ③ to the same degrees.
   Then confirm the angle of the audio/control head and adjust again.

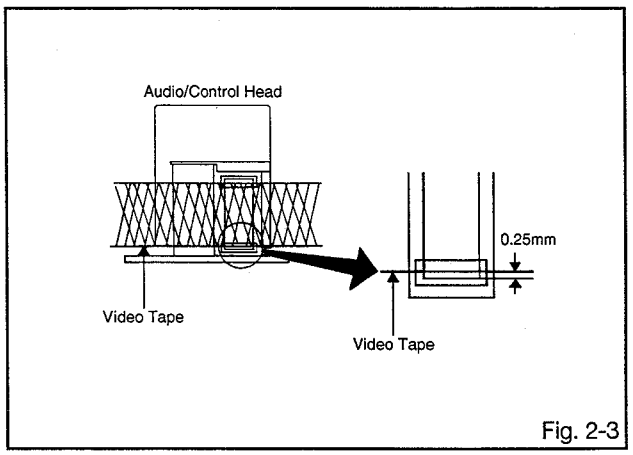
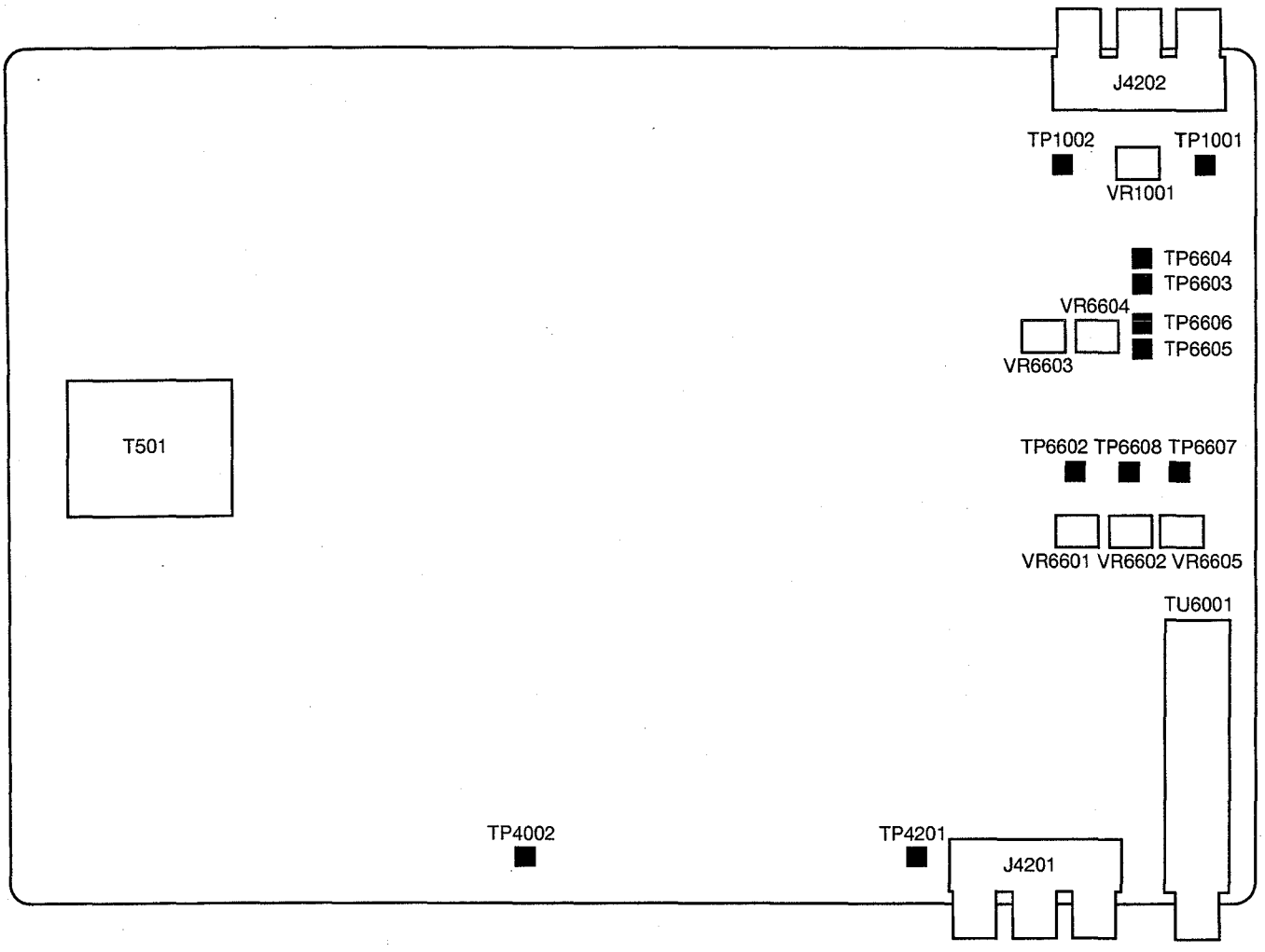


Fig. 2-3

2-4: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk.
   (Refer to item 1-1)
2. Confirm and adjust tension post position.
   (Refer to item 1-2)
3. Adjust the guide roller.
   (Refer to item 2-1)
4. Adjust the A/C head tilt.
   (Refer to item 2-2)
5. Adjust the A/C head height and azimuth.
   (Refer to item 2-3)
6. Connect CH-1 on the oscilloscope to **TP1002** and CH-2 to **TP4002**. Playback the VHS alignment tape **(JG001)**. Set the tracking to manual center. Adjust X with the screw driver for X **(JG153)** as the **Fig. 2-1-A** and **Fig. 2-1-B**. **(Refer to No. 2 of the item 2-1).**

MAJOR COMPONENTS LOCATION GUIDE



MAIN

ELECTRICAL ADJUSTMENTS

3. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease **(YG6260M)**.
(To prevent the damage to IC's and transistors.)

3-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape **(JG001A)**

INSTRUCTIONS

1. Playback the alignment tape. **(JG001A)**
2. Press both Tracking AUTO key on the remote control and the PLAY button on the set simultaneously until the indicator ATR disappear's. If the indicator ATR disappear's, the adjustment is finished.

(If the ATR indicator is still illuminated)

1. Connect CH-1 on the oscilloscope to **TP1002** and CH-2 to **TP4201**.
2. Playback the alignment tape **(JG001A)**.
3. Adjust **VR1001** until the beginning of the switching pulse is 6.5 ± 0.5(H) at both leading and trailing edges as shown in the **Fig. 3-1-A, B**.

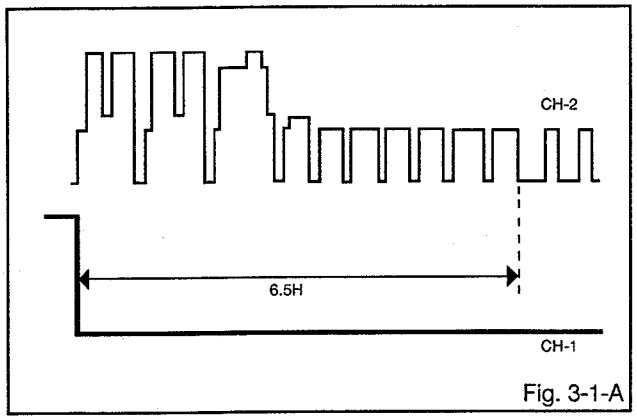


Fig. 3-1-A

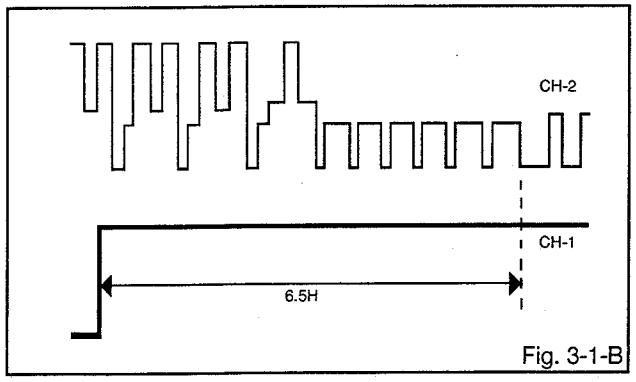


Fig. 3-1-B

3-2: STEREO VCO

CONDITIONS

MODE-STOP

NOTE

The AC Cord must be removed before shorting disconnecting between **TP6603** and **TP6604**.

INSTRUCTIONS

1. Set **VR6605** until the audio level is minimum.
2. Make a short circuit between **TP6603** and **TP6604**.
3. Connect the frequency counter to **TP6608**.
4. Adjust the **VR6604** so that the frequency counter value is 15.73 KHz ± 40 Hz.
5. After the adjustments, disconnect the short circuit between **TP6603** and **TP6604**.

3-3: STEREO FILTER

CONDITIONS

MODE-STOP

NOTE

The AC Cord must be removed before shorting disconnecting between **TP6605** and **TP6606**.

INSTRUCTIONS

1. Set **VR6605** until the audio level is minimum.
2. Make a short circuit between **TP6605** and **TP6606**.
3. Input the signal (16.5 KHz 100mVrms) to **TP6607**.
4. Connect the AC voltmeter to **TP6602**.
5. Adjust the **VR6603** so that the value of AC voltmeter is minimum.
6. After the adjustments, disconnect the short circuit between **TP6605** and **TP6606**.

3-4: AUDIO LEVEL

CONDITIONS

MODE-STOP
Input Signal-Audio Signal : 400Hz (60% modulation)

INSTRUCTIONS

1. Receive the monochrome pattern signal.
2. Connect the AC voltmeter to **TP6607**.
3. Adjust the **VR6605** so that the value of AC voltmeter is 90 ± 3mV.

3-5: TUNER SEPARATION

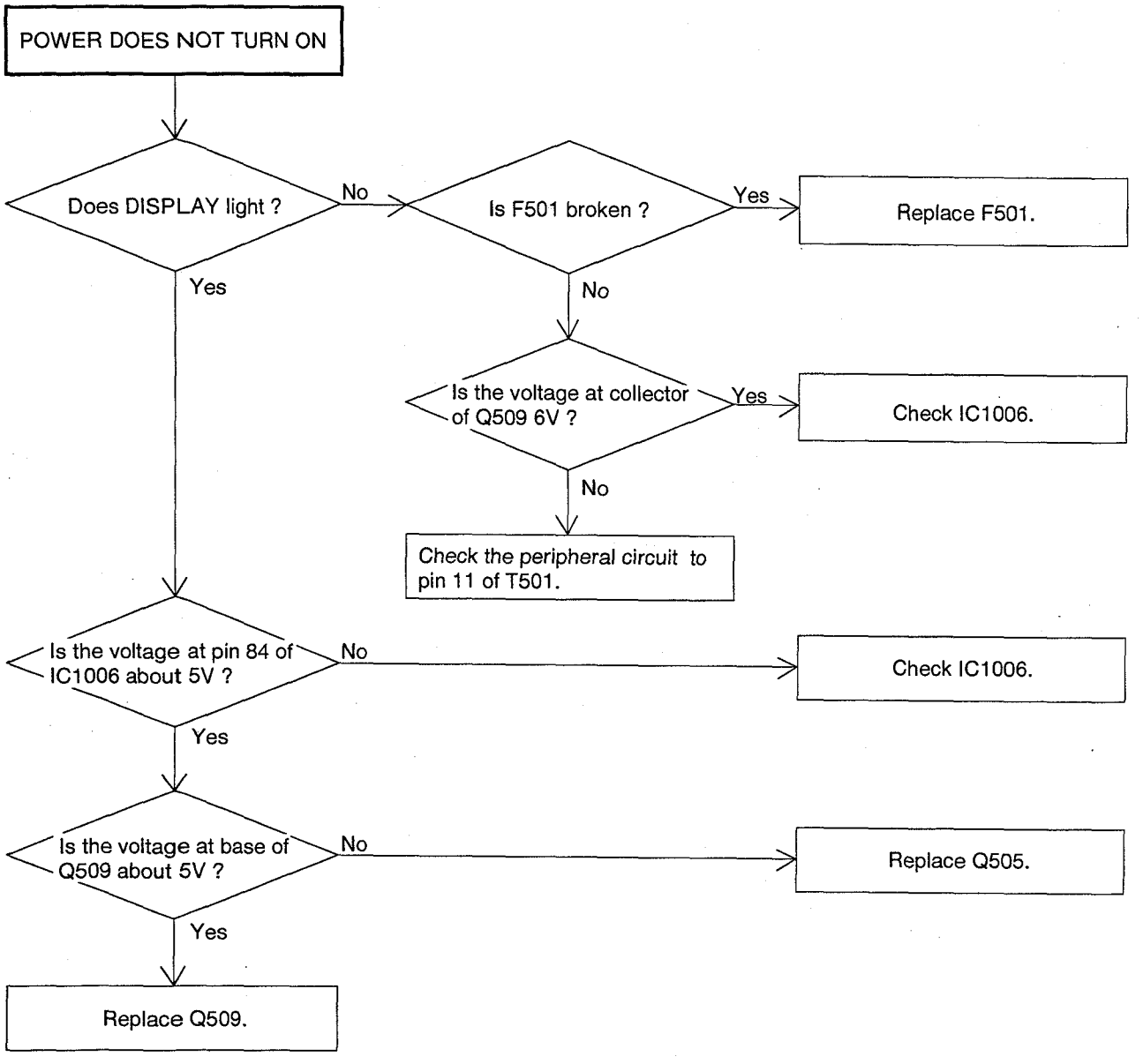
CONDITIONS

MODE-STOP
Input Signal : CATV-36CH (L CH = 2KHz, R CH = 400Hz)
AUDIO OUTPUT SW : STEREO POSITION

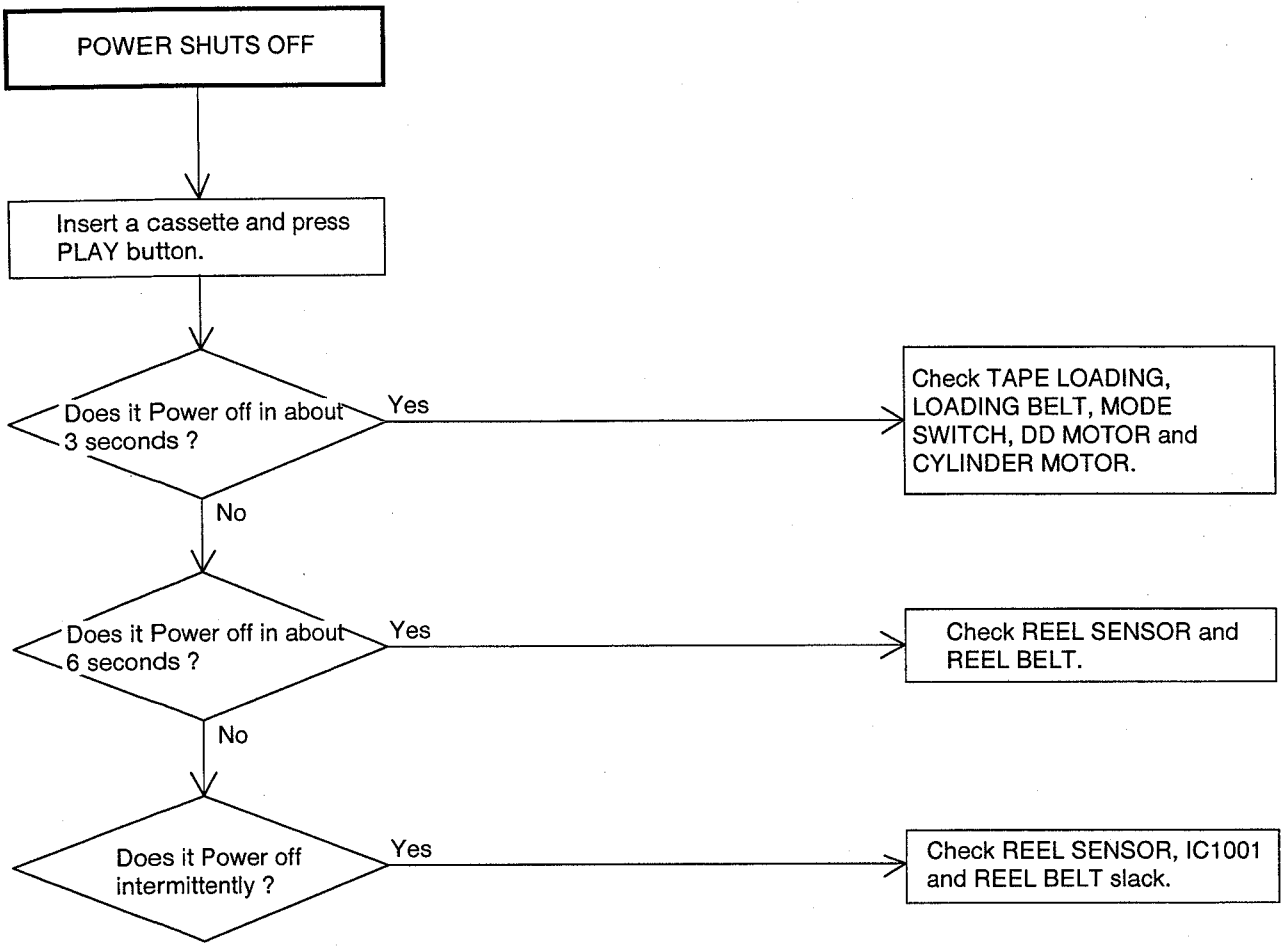
INSTRUCTIONS

1. Input the signal (stereo).
2. Connect the AC voltmeter to AUDIO OUT (L-CH, R-CH) through 400Hz (L-CH) filter and 2KHz (R-CH) filter.
3. Adjust the **VR6602** so that the R-CH output is minimum.
4. Adjust the **VR6601** so that the L-CH output is minimum.

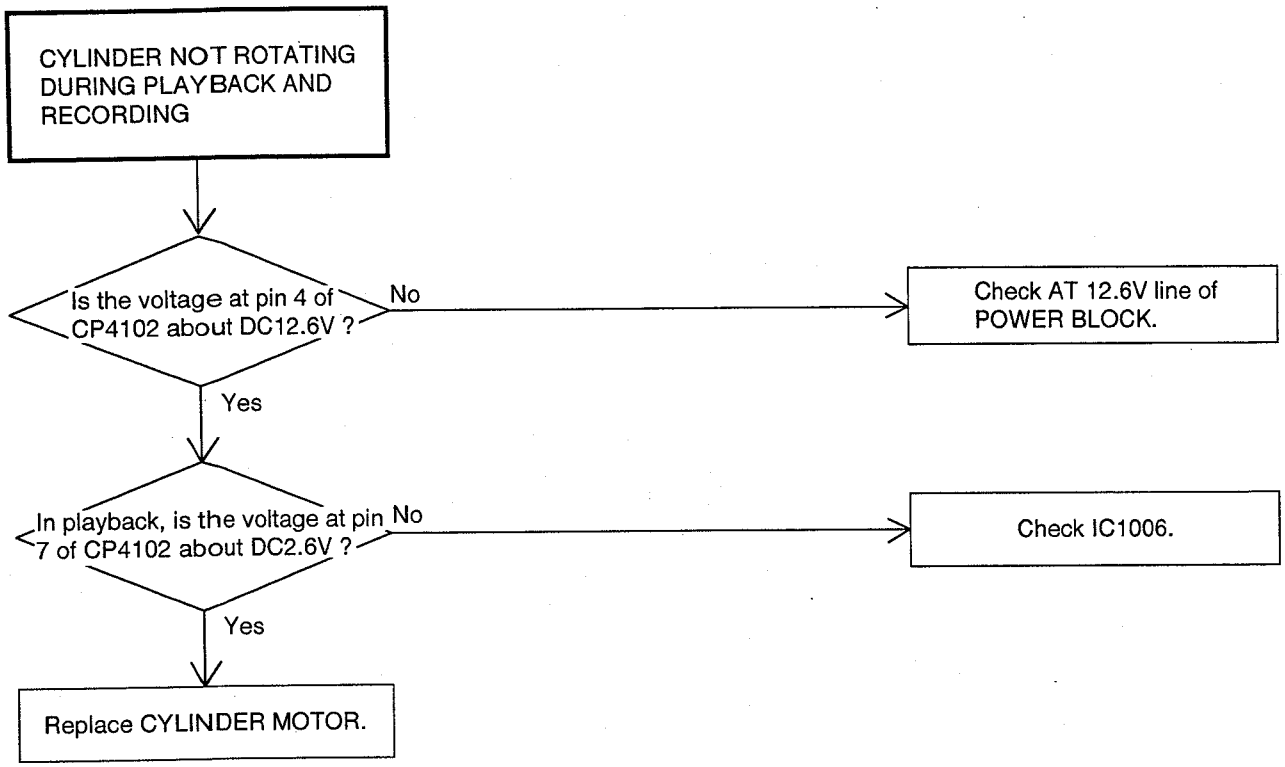
TROUBLESHOOTING GUIDE



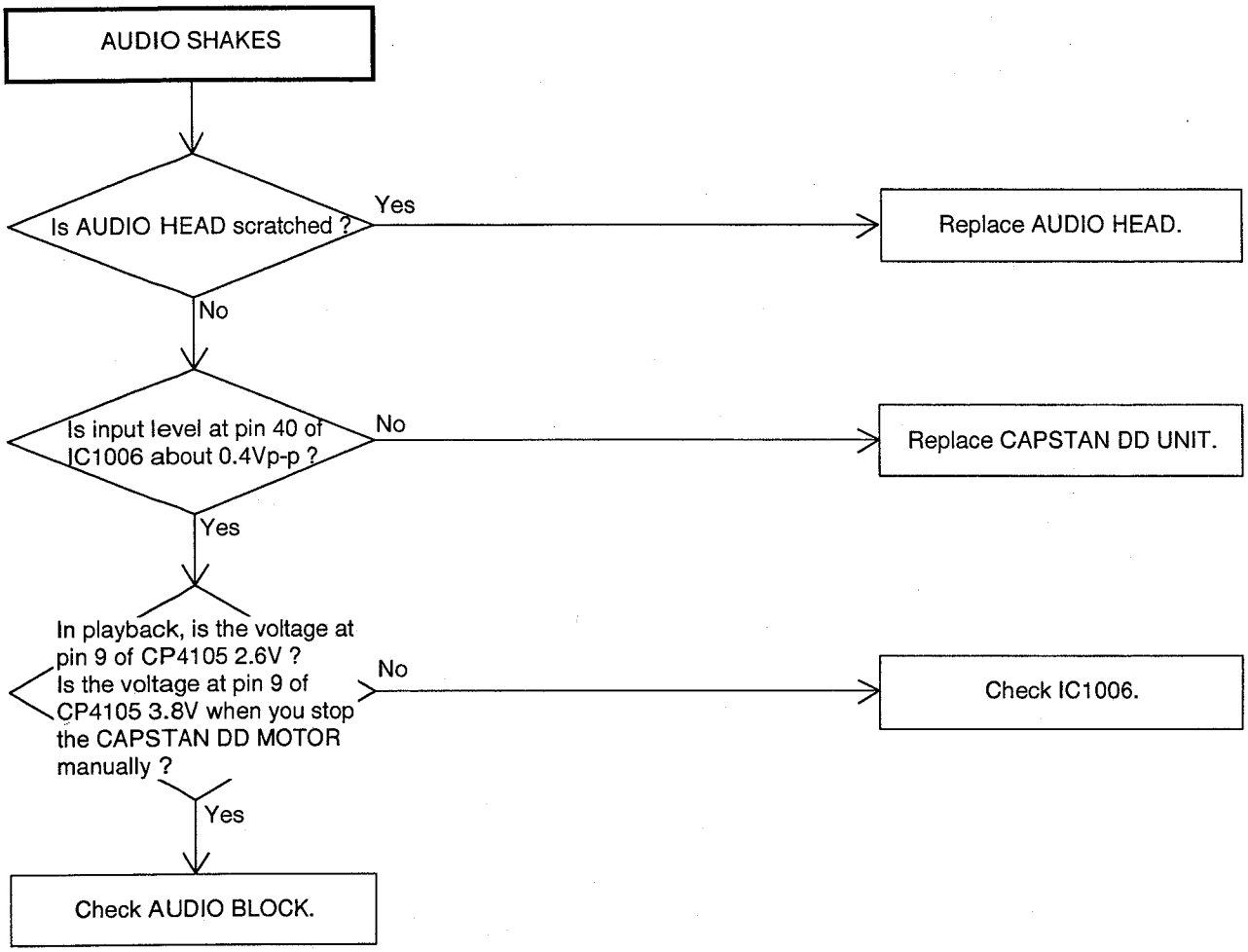
TROUBLESHOOTING GUIDE


POWER SHUTS OFF
Insert a cassette and press PLAY button.
Does it Power off in about 3 seconds ?
Yes
Check TAPE LOADING, LOADING BELT, MODE SWITCH, DD MOTOR and CYLINDER MOTOR.
No
Does it Power off in about 6 seconds ?
Yes
Check REEL SENSOR and REEL BELT.
No
Does it Power off intermittently ?
Yes
Check REEL SENSOR, IC1001 and REEL BELT slack.

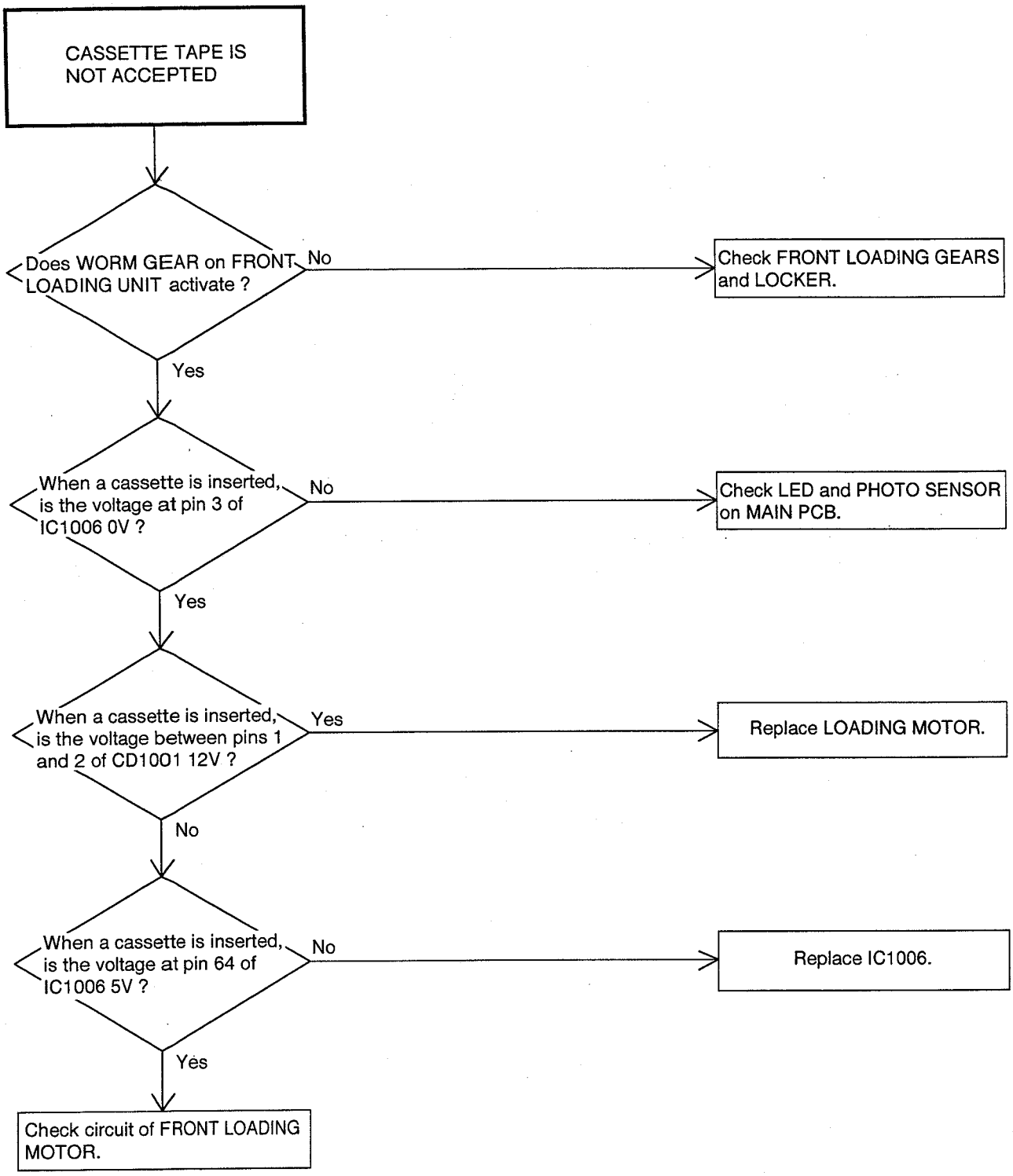
TROUBLESHOOTING GUIDE


CYLINDER NOT ROTATING DURING PLAYBACK AND RECORDING
Is the voltage at pin 4 of CP4102 about DC12.6V ?
No
Check AT 12.6V line of POWER BLOCK.
Yes
In playback, is the voltage at pin 7 of CP4102 about DC2.6V ?
No
Check IC1006.
Yes
Replace CYLINDER MOTOR.

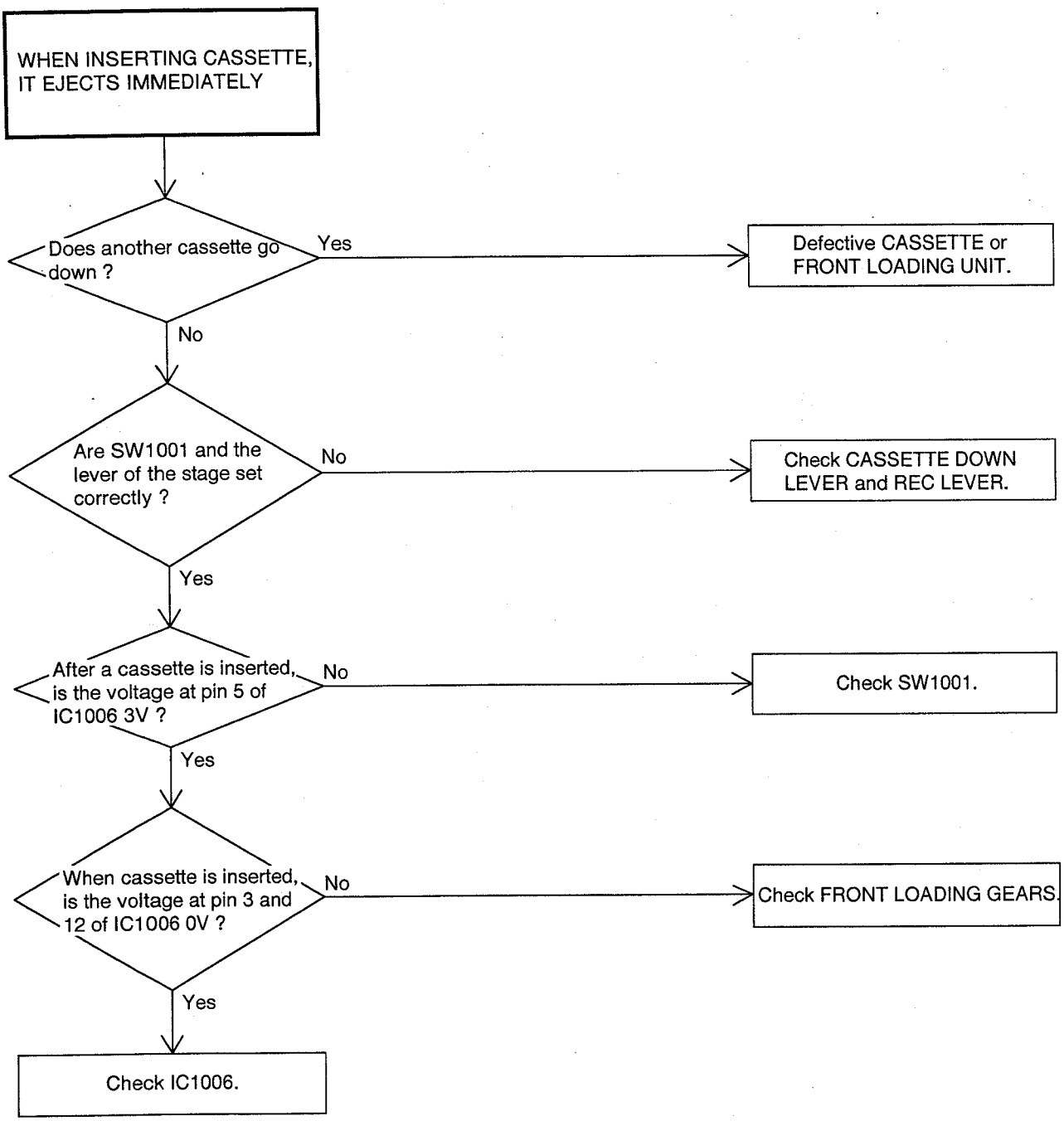
TROUBLESHOOTING GUIDE


AUDIO SHAKES
Is AUDIO HEAD scratched ?
Yes
Replace AUDIO HEAD.
No
Is input level at pin 40 of IC1006 about 0.4Vp-p ?
No
Replace CAPSTAN DD UNIT.
Yes
In playback, is the voltage at pin 9 of CP4105 2.6V ? Is the voltage at pin 9 of CP4105 3.8V when you stop the CAPSTAN DD MOTOR manually ?
No
Check IC1006.
Yes
Check AUDIO BLOCK.

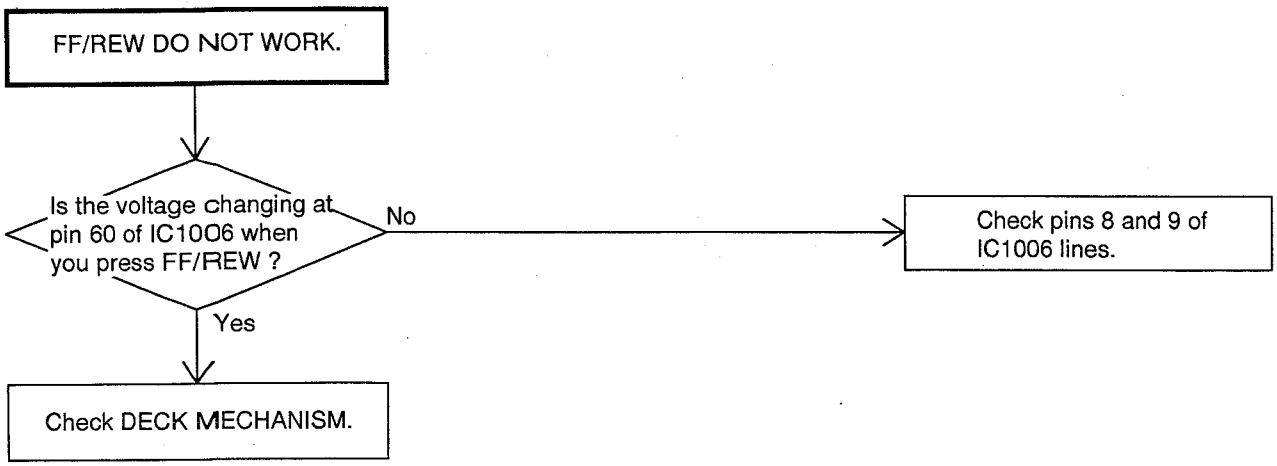
TROUBLESHOOTING GUIDE


CASSETTE TAPE IS NOT ACCEPTED
Does WORM GEAR on FRONT LOADING UNIT activate ?
No
Check FRONT LOADING GEARS and LOCKER.
Yes
When a cassette is inserted, is the voltage at pin 3 of IC1006 0V ?
No
Check LED and PHOTO SENSOR on MAIN PCB.
Yes
When a cassette is inserted, is the voltage between pins 1 and 2 of CD1001 12V ?
Yes
Replace LOADING MOTOR.
No
When a cassette is inserted, is the voltage at pin 64 of IC1006 5V ?
No
Replace IC1006.
Yes
Check circuit of FRONT LOADING MOTOR.

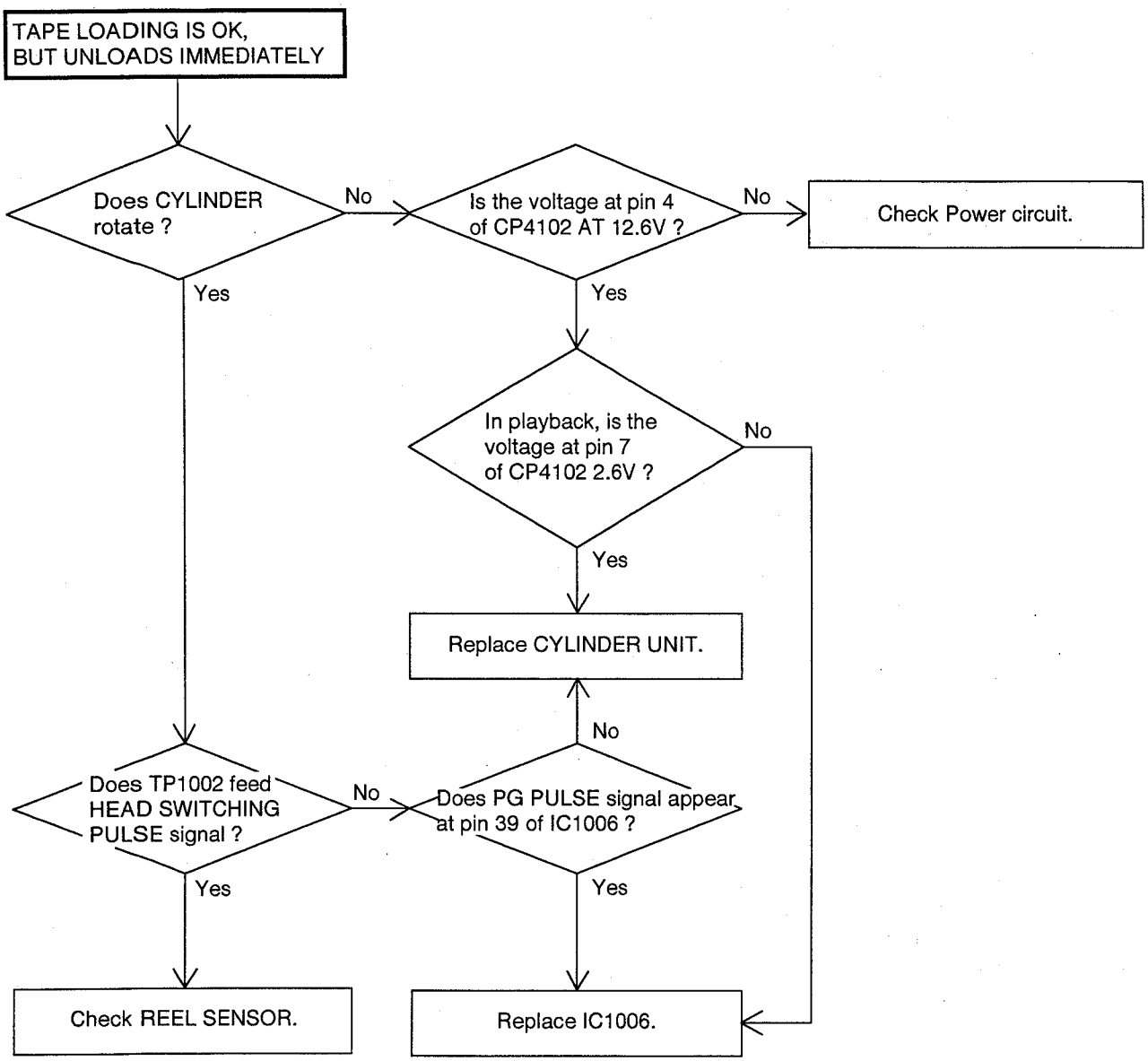
TROUBLESHOOTING GUIDE


WHEN INSERTING CASSETTE, IT EJECTS IMMEDIATELY
Does another cassette go down ?
Yes
Defective CASSETTE or FRONT LOADING UNIT.
No
Are SW1001 and the lever of the stage set correctly ?
No
Check CASSETTE DOWN LEVER and REC LEVER.
Yes
After a cassette is inserted, is the voltage at pin 5 of IC1006 3V ?
No
Check SW1001.
Yes
When cassette is inserted, is the voltage at pin 3 and 12 of IC1006 0V ?
No
Check FRONT LOADING GEARS.
Yes
Check IC1006.

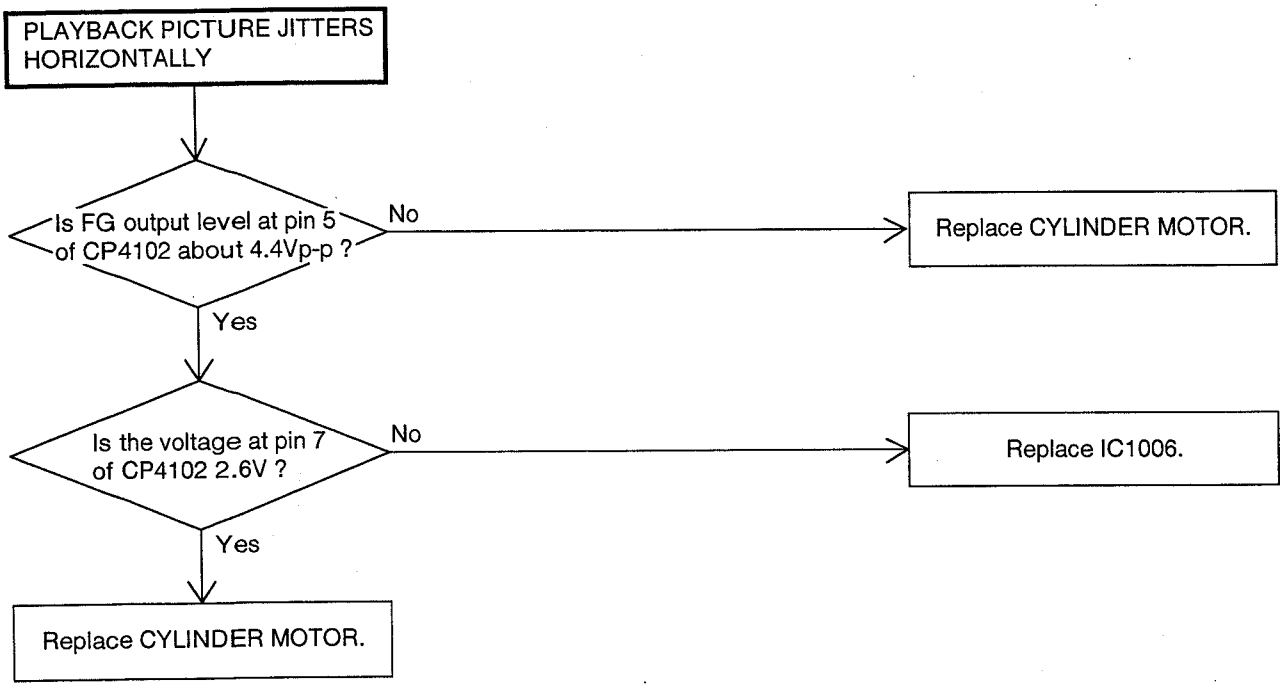
TROUBLESHOOTING GUIDE

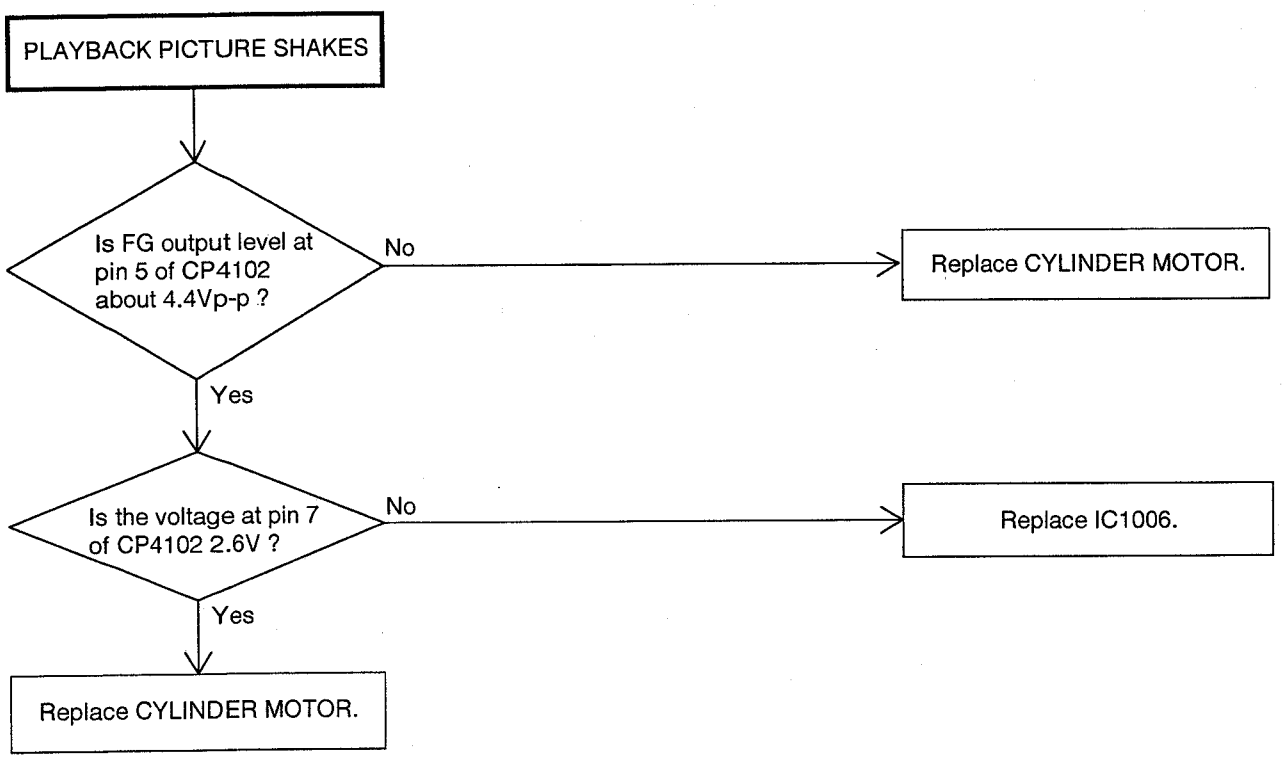

FF/REW DO NOT WORK.
Is the voltage changing at pin 60 of IC1006 when you press FF/REW ?
No
Check pins 8 and 9 of IC1006 lines.
Yes
Check DECK MECHANISM.

TROUBLESHOOTING GUIDE

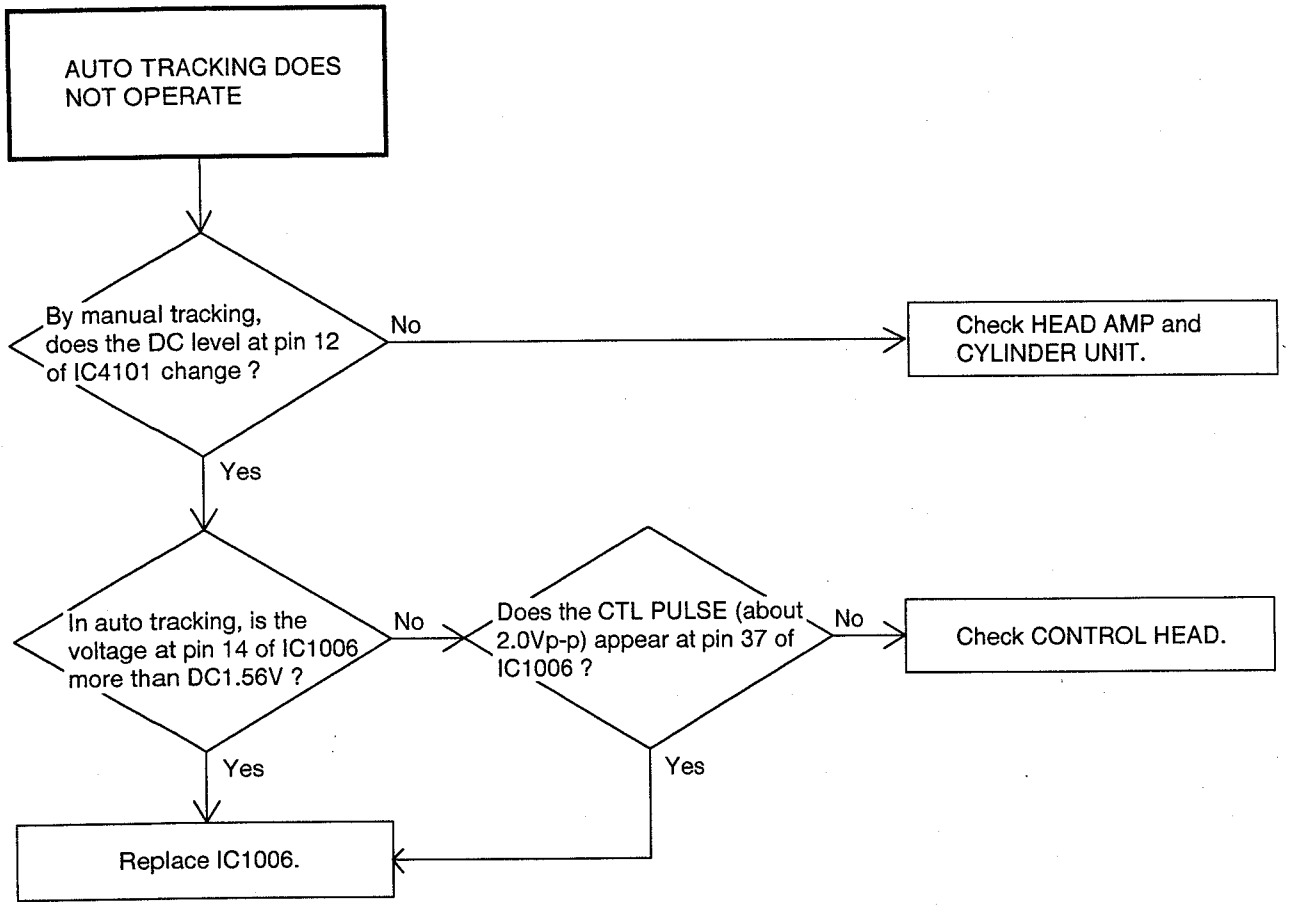


TROUBLESHOOTING GUIDE

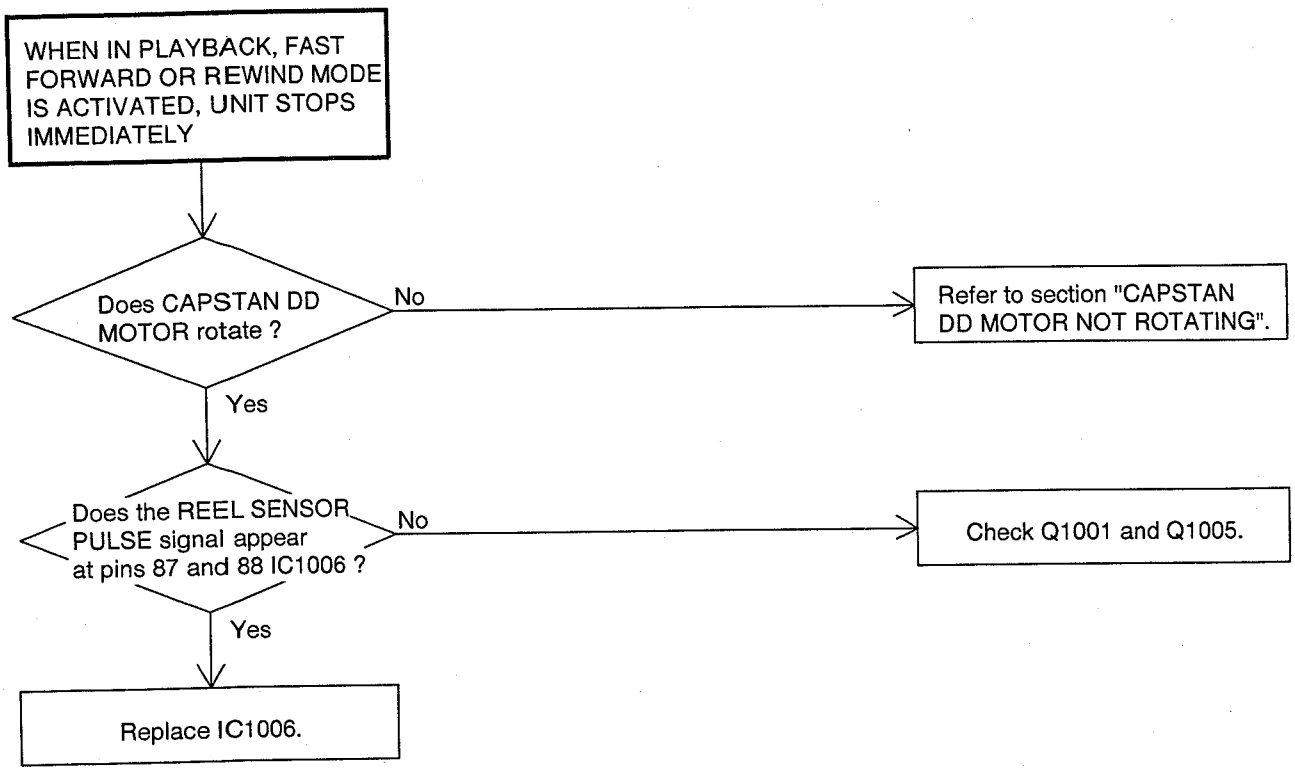




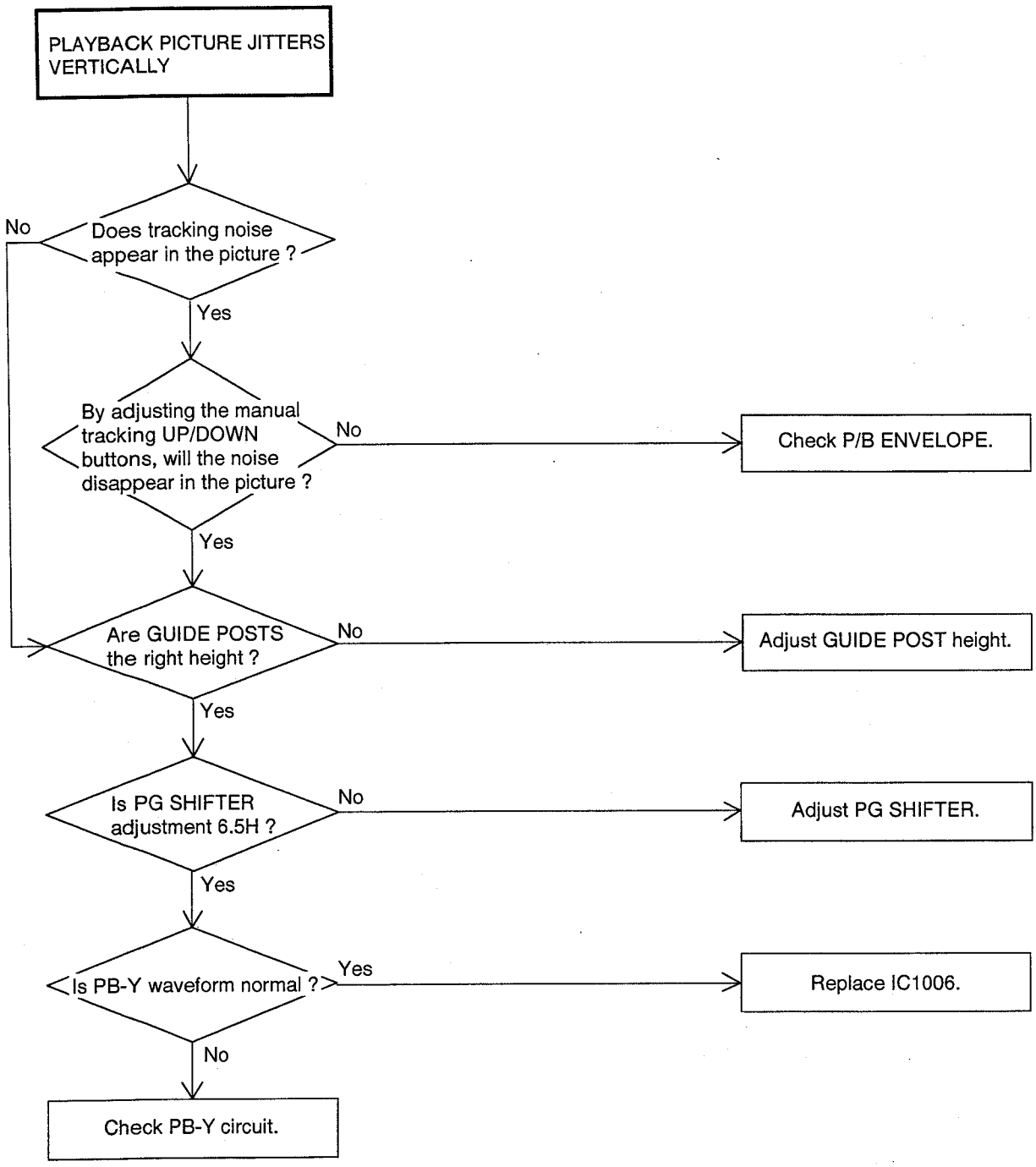
TROUBLESHOOTING GUIDE


AUTO TRACKING DOES NOT OPERATE
By manual tracking, does the DC level at pin 12 of IC4101 change ?
No
Check HEAD AMP and CYLINDER UNIT.
Yes
In auto tracking, is the voltage at pin 14 of IC1006 more than DC1.56V ?
No
Does the CTL PULSE (about 2.0Vp-p) appear at pin 37 of IC1006 ?
No
Check CONTROL HEAD.
Yes
Yes
Replace IC1006.

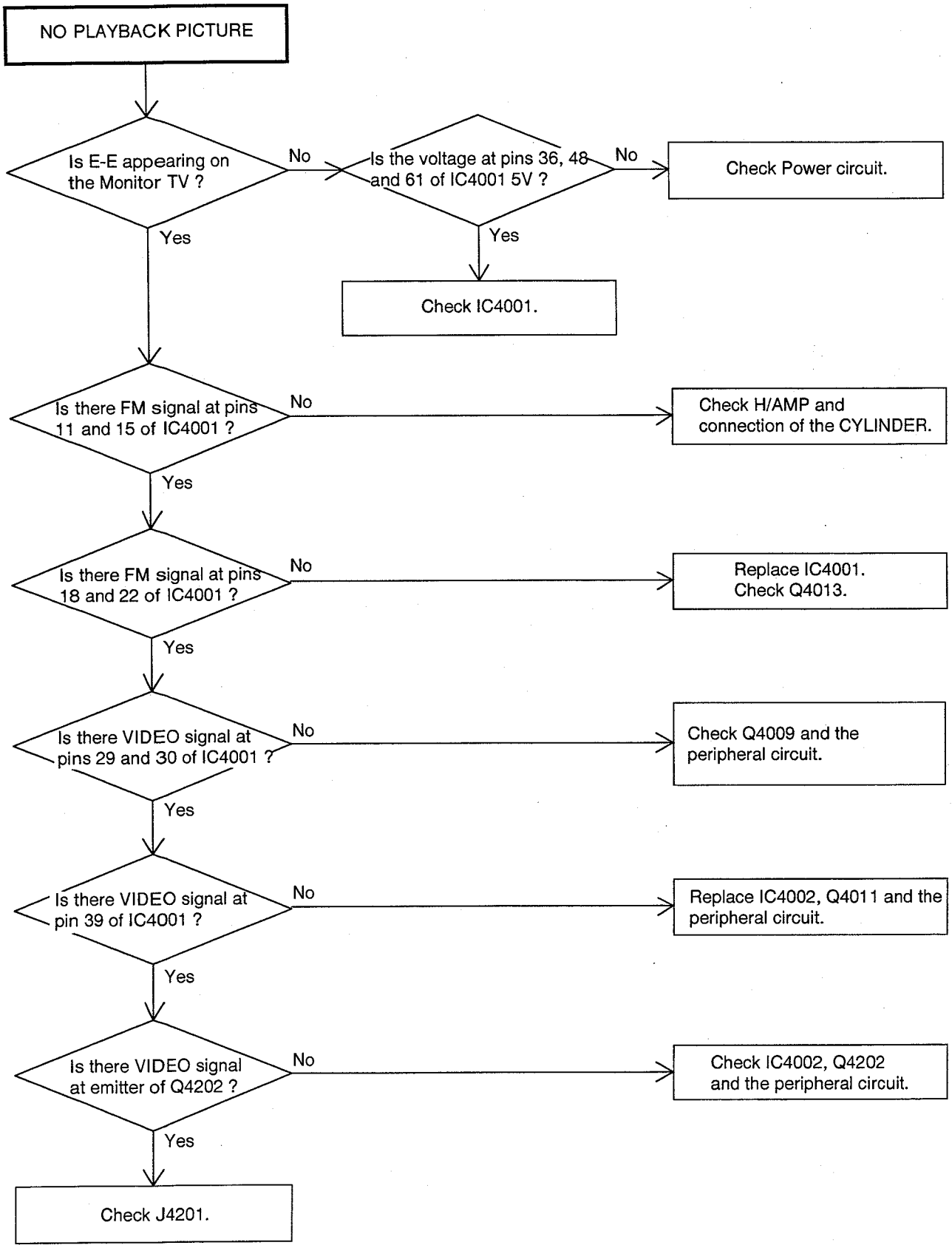
TROUBLESHOOTING GUIDE


WHEN IN PLAYBACK, FAST FORWARD OR REWIND MODE IS ACTIVATED, UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate ?
No
Refer to section "CAPSTAN DD MOTOR NOT ROTATING".
Yes
Does the REEL SENSOR PULSE signal appear at pins 87 and 88 IC1006 ?
No
Check Q1001 and Q1005.
Yes
Replace IC1006.

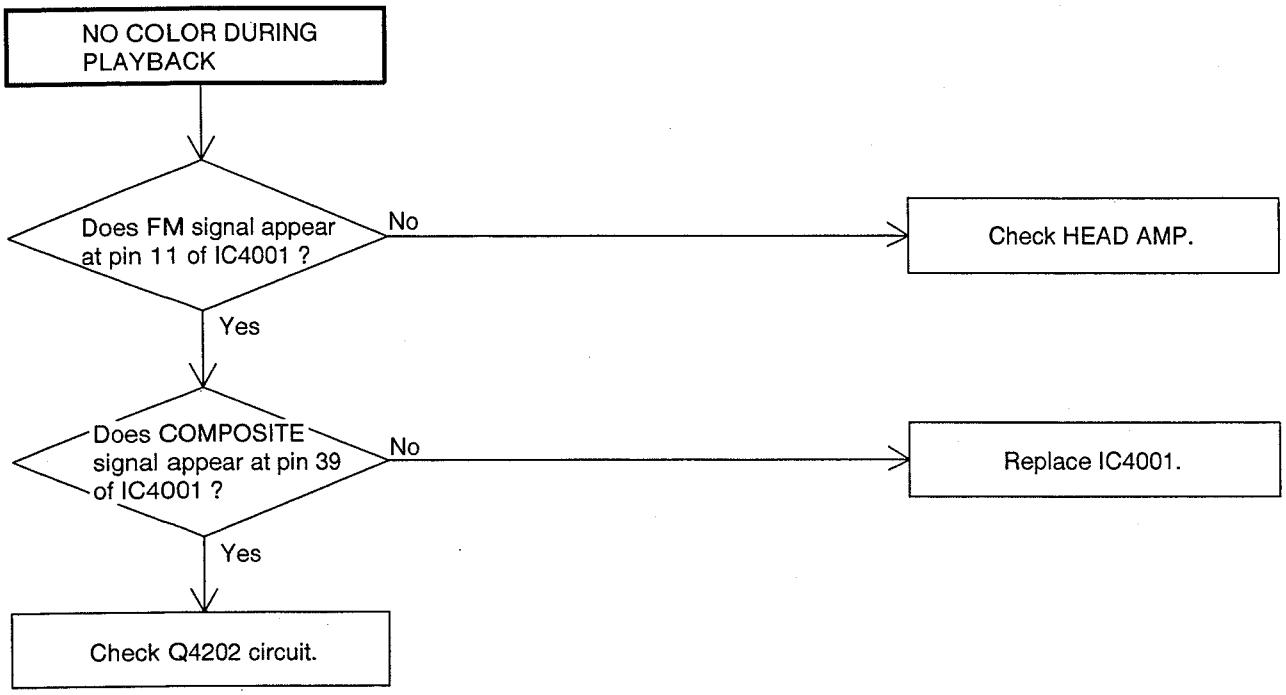
TROUBLESHOOTING GUIDE



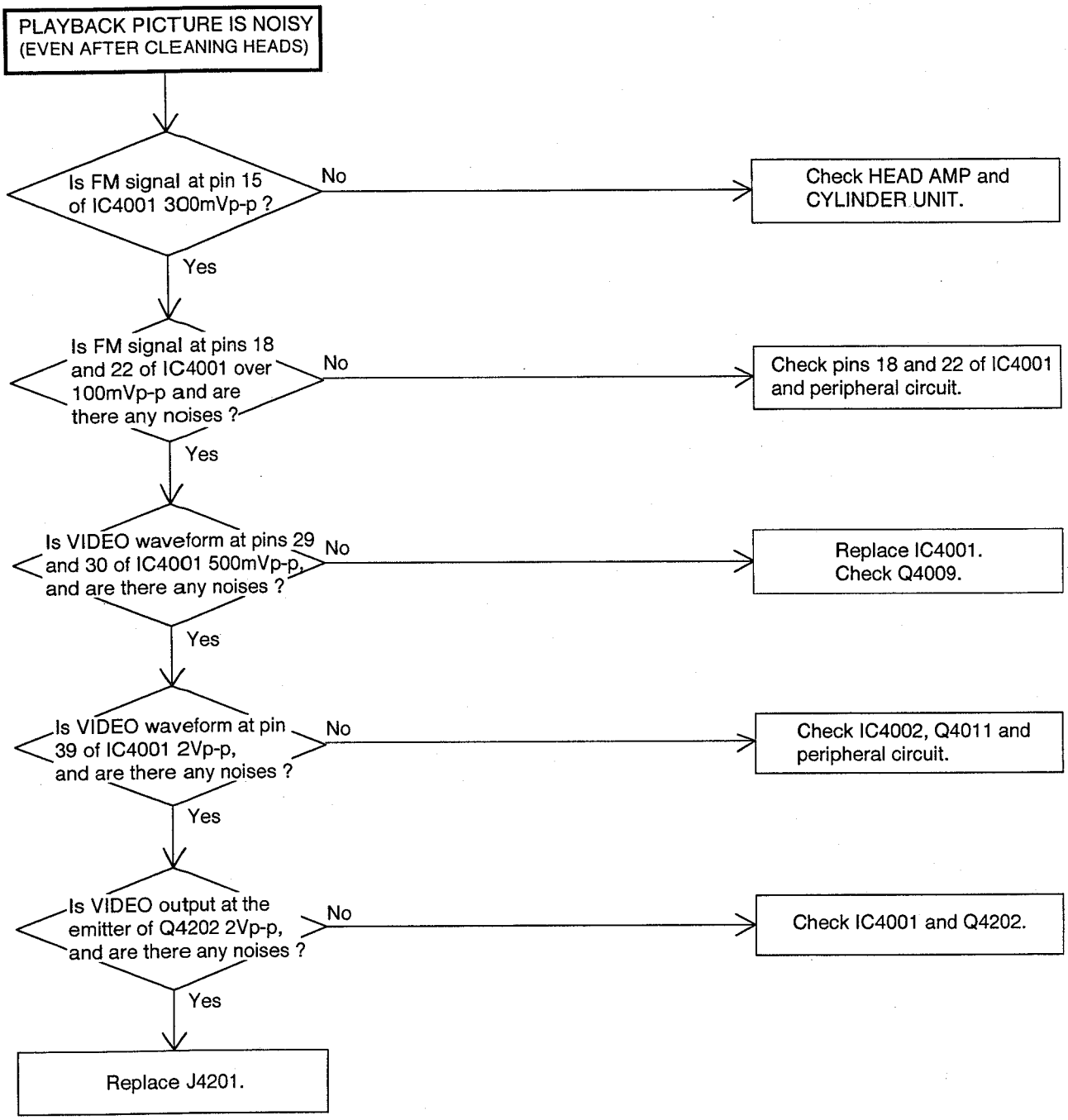
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE
Is E-E appearing on the Monitor TV ?
No
Is the voltage at pins 36, 48 and 61 of IC4001 5V ?
No
Check Power circuit.
Yes
Yes
Check IC4001.
Is there FM signal at pins 11 and 15 of IC4001 ?
No
Check H/AMP and connection of the CYLINDER.
Yes
Is there FM signal at pins 18 and 22 of IC4001 ?
No
Replace IC4001. Check Q4013.
Yes
Is there VIDEO signal at pins 29 and 30 of IC4001 ?
No
Check Q4009 and the peripheral circuit.
Yes
Is there VIDEO signal at pin 39 of IC4001 ?
No
Replace IC4002, Q4011 and the peripheral circuit.
Yes
Is there VIDEO signal at emitter of Q4202 ?
No
Check IC4002, Q4202 and the peripheral circuit.
Yes
Check J4201.

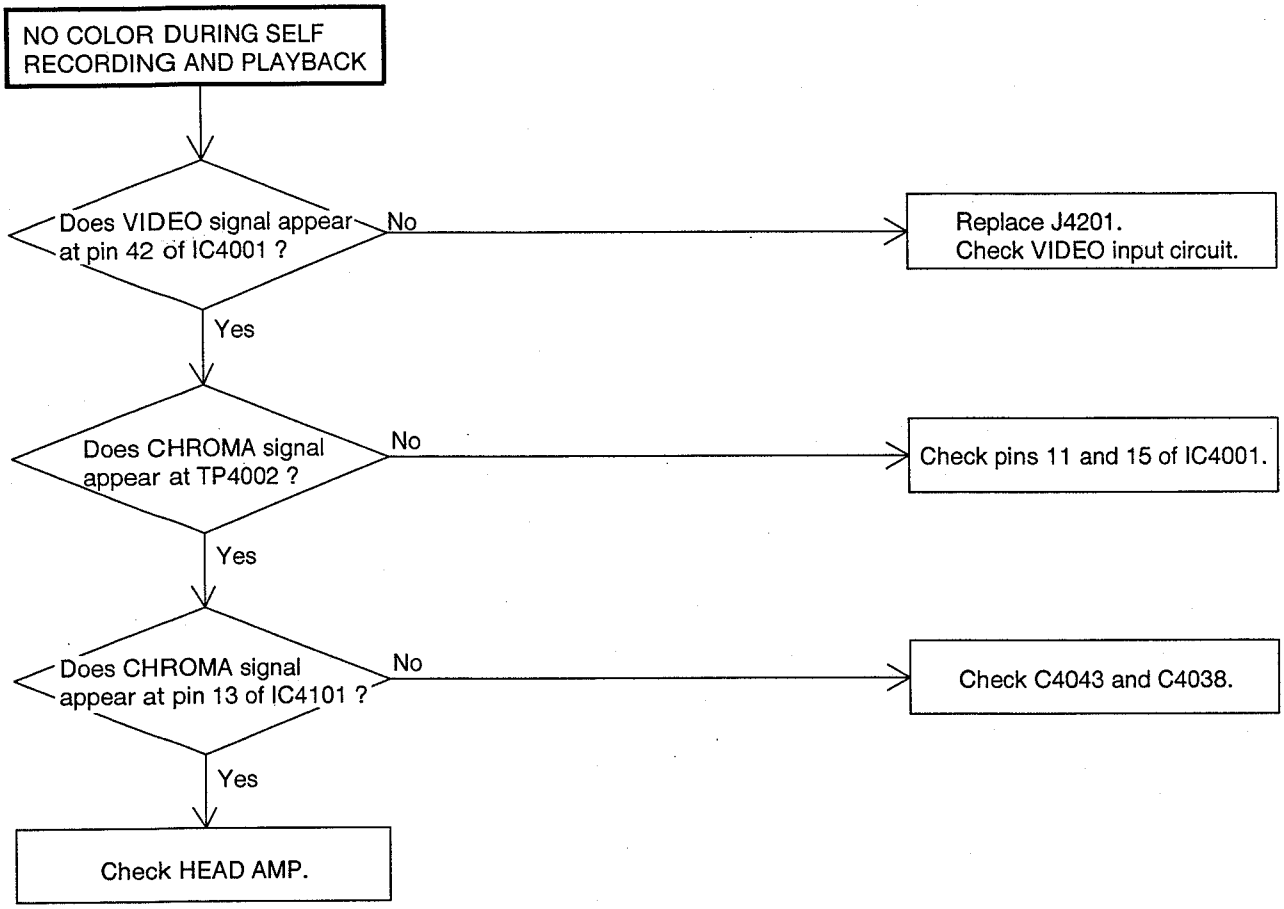
TROUBLESHOOTING GUIDE



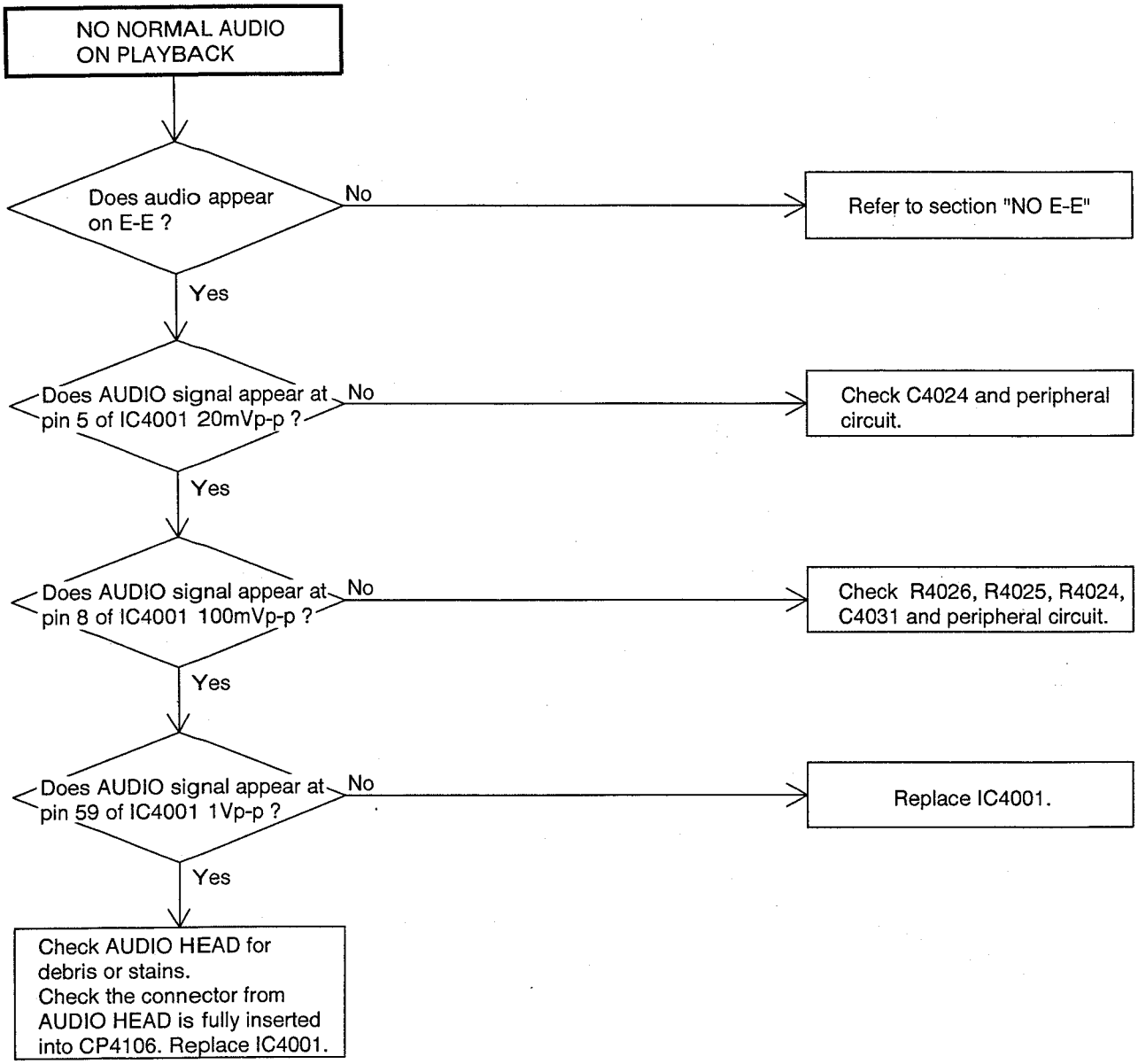
TROUBLESHOOTING GUIDE


PLAYBACK PICTURE IS NOISY
(EVEN AFTER CLEANING HEADS)
Is FM signal at pin 15 of IC4001 300mVp-p ?
No
Check HEAD AMP and CYLINDER UNIT.
Yes
Is FM signal at pins 18 and 22 of IC4001 over 100mVp-p and are there any noises ?
No
Check pins 18 and 22 of IC4001 and peripheral circuit.
Yes
Is VIDEO waveform at pins 29 and 30 of IC4001 500mVp-p, and are there any noises ?
No
Replace IC4001.
Check Q4009.
Yes
Is VIDEO waveform at pin 39 of IC4001 2Vp-p, and are there any noises ?
No
Check IC4002, Q4011 and peripheral circuit.
Yes
Is VIDEO output at the emitter of Q4202 2Vp-p, and are there any noises ?
No
Check IC4001 and Q4202.
Yes
Replace J4201.

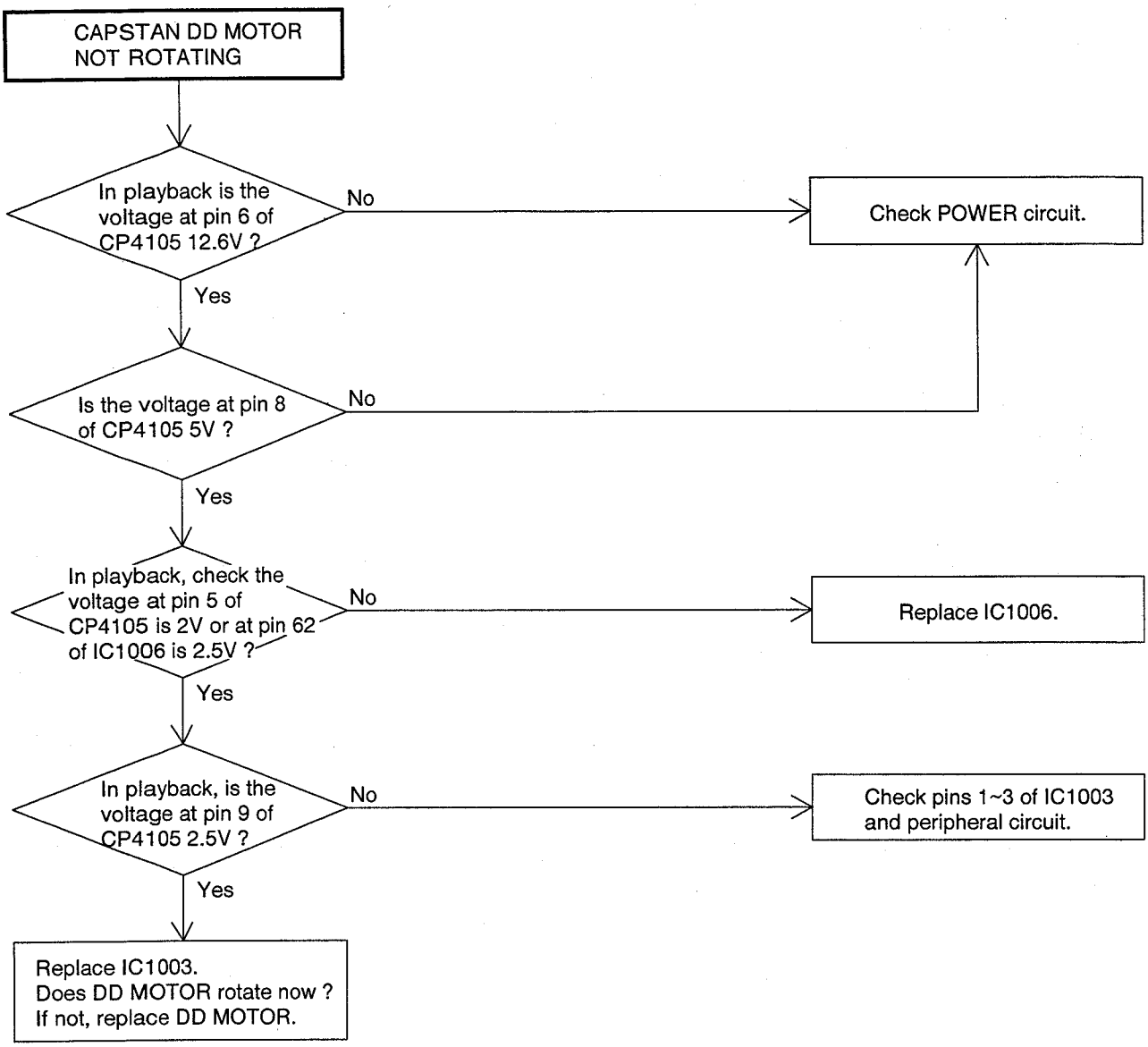
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Does VIDEO signal appear at pin 42 of IC4001 ?
No
Replace J4201.
Check VIDEO input circuit.
Yes
Does CHROMA signal appear at TP4002 ?
No
Check pins 11 and 15 of IC4001.
Yes
Does CHROMA signal appear at pin 13 of IC4101 ?
No
Check C4043 and C4038.
Yes
Check HEAD AMP.

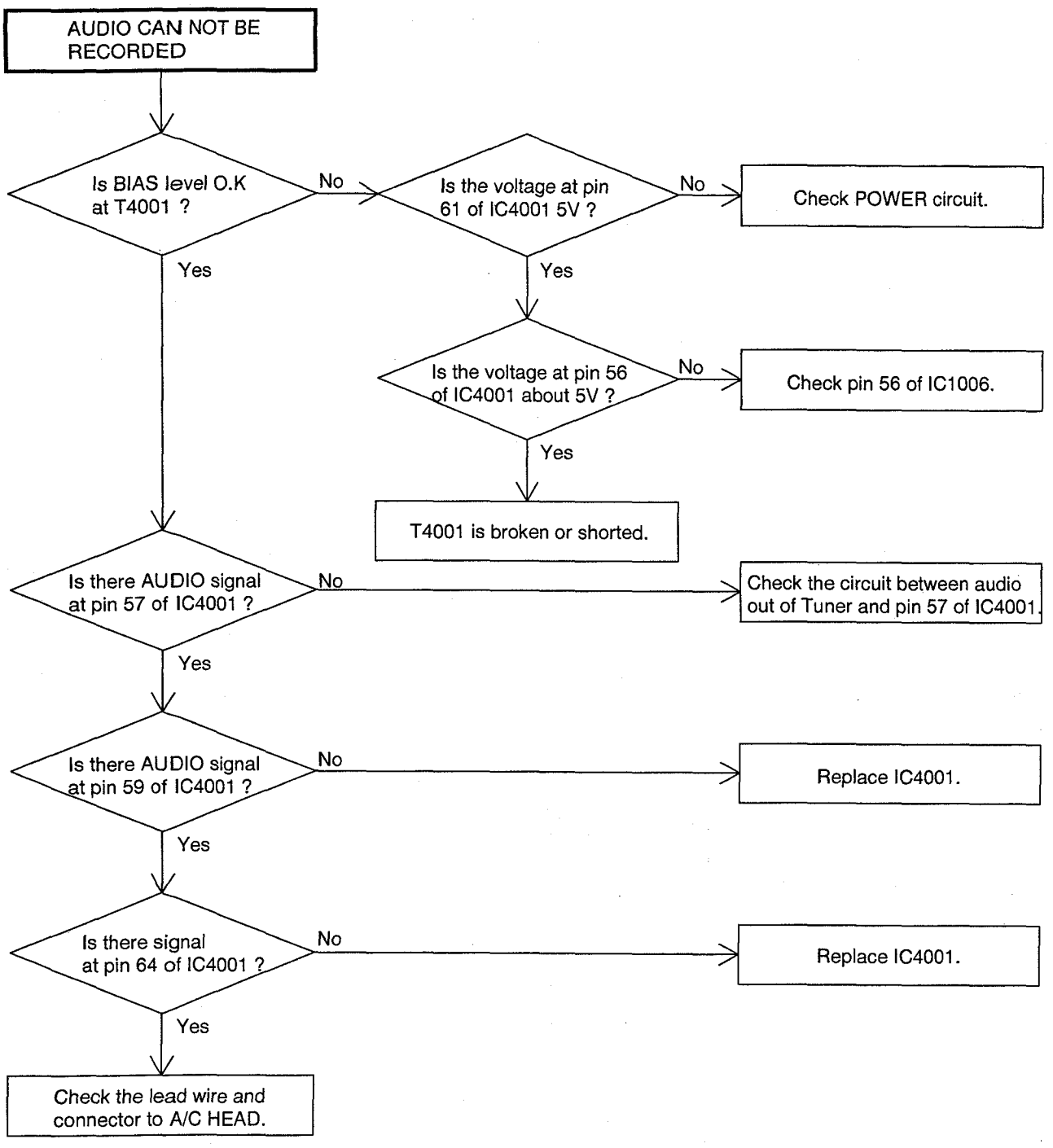
TROUBLESHOOTING GUIDE


NO NORMAL AUDIO ON PLAYBACK
Does audio appear on E-E ?
No
Refer to section "NO E-E"
Yes
Does AUDIO signal appear at pin 5 of IC4001 20mVp-p ?
No
Check C4024 and peripheral circuit.
Yes
Does AUDIO signal appear at pin 8 of IC4001 100mVp-p ?
No
Check R4026, R4025, R4024, C4031 and peripheral circuit.
Yes
Does AUDIO signal appear at pin 59 of IC4001 1Vp-p ?
No
Replace IC4001.
Yes
Check AUDIO HEAD for debris or stains.
Check the connector from AUDIO HEAD is fully inserted into CP4106. Replace IC4001.

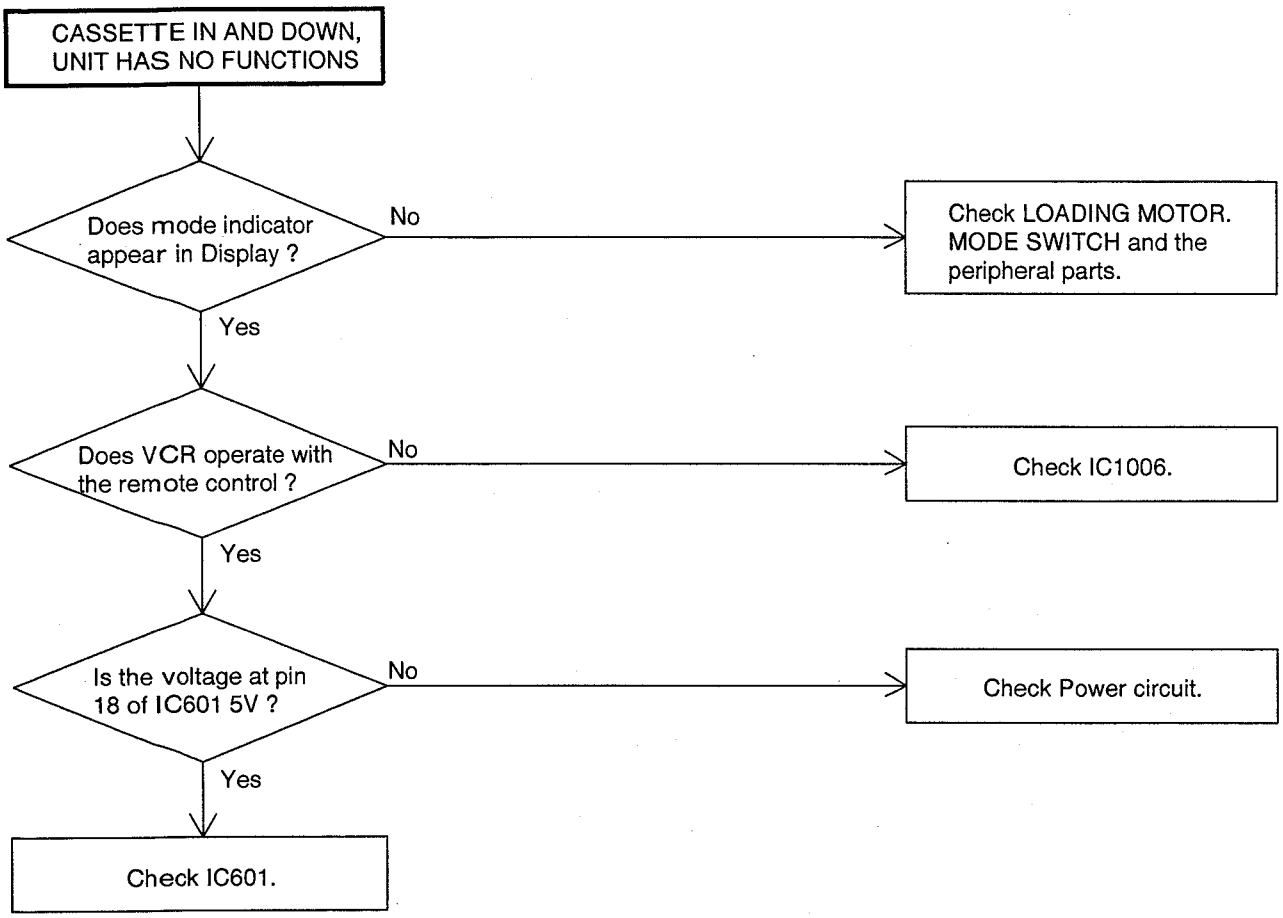
TROUBLESHOOTING GUIDE


CAPSTAN DD MOTOR NOT ROTATING
In playback is the voltage at pin 6 of CP4105 12.6V ?
No
Check POWER circuit.
Yes
Is the voltage at pin 8 of CP4105 5V ?
No
Yes
In playback, check the voltage at pin 5 of CP4105 is 2V or at pin 62 of IC1006 is 2.5V ?
No
Replace IC1006.
Yes
In playback, is the voltage at pin 9 of CP4105 2.5V ?
No
Check pins 1~3 of IC1003 and peripheral circuit.
Yes
Replace IC1003.
Does DD MOTOR rotate now ?
If not, replace DD MOTOR.

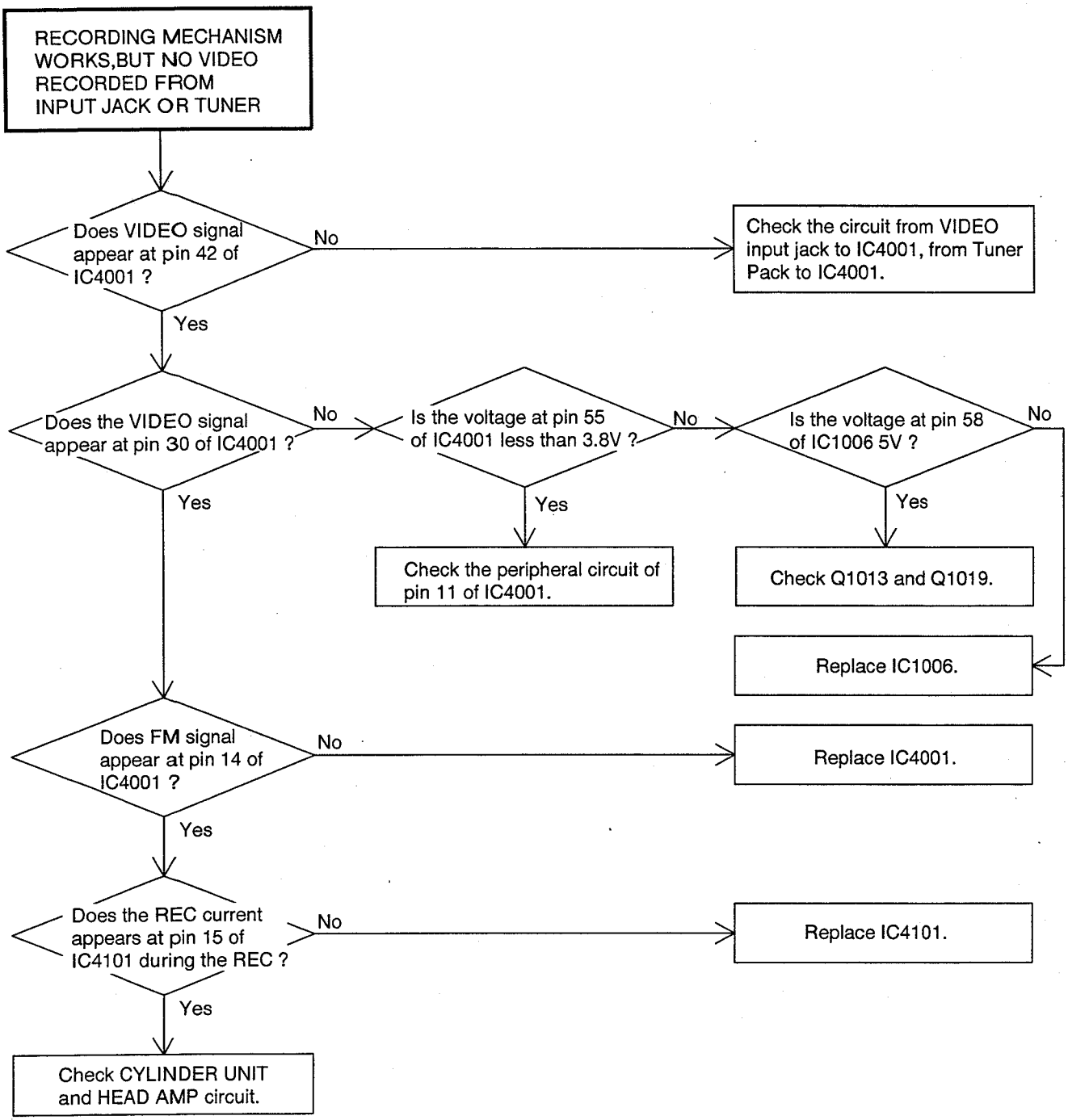
TROUBLESHOOTING GUIDE


AUDIO CAN NOT BE RECORDED
Is BIAS level O.K at T4001 ?
No
Is the voltage at pin 61 of IC4001 5V ?
No
Check POWER circuit.
Yes
Yes
Is the voltage at pin 56 of IC4001 about 5V ?
No
Check pin 56 of IC1006.
Yes
T4001 is broken or shorted.
Is there AUDIO signal at pin 57 of IC4001 ?
No
Check the circuit between audio out of Tuner and pin 57 of IC4001.
Yes
Is there AUDIO signal at pin 59 of IC4001 ?
No
Replace IC4001.
Yes
Is there signal at pin 64 of IC4001 ?
No
Replace IC4001.
Yes
Check the lead wire and connector to A/C HEAD.

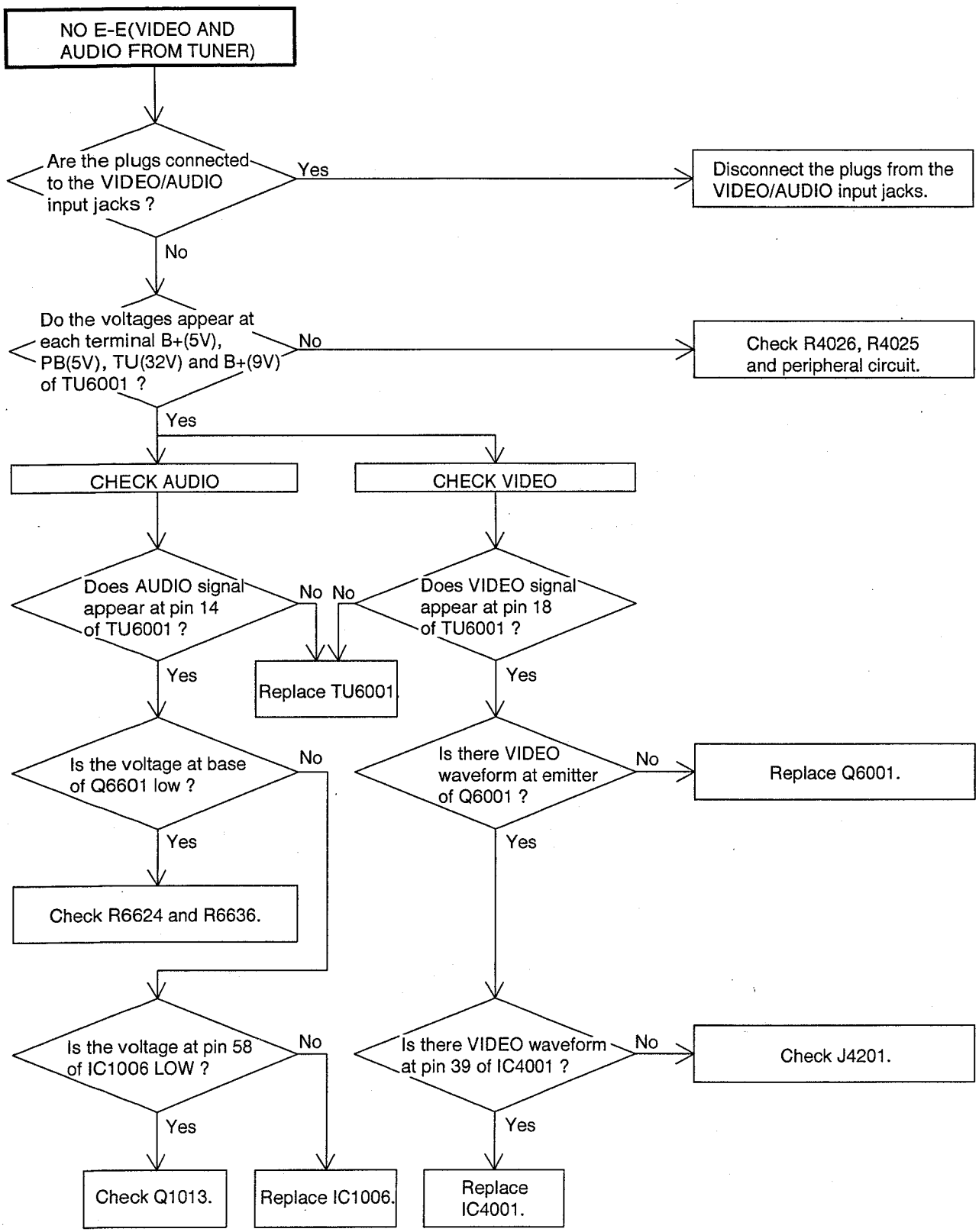
TROUBLESHOOTING GUIDE



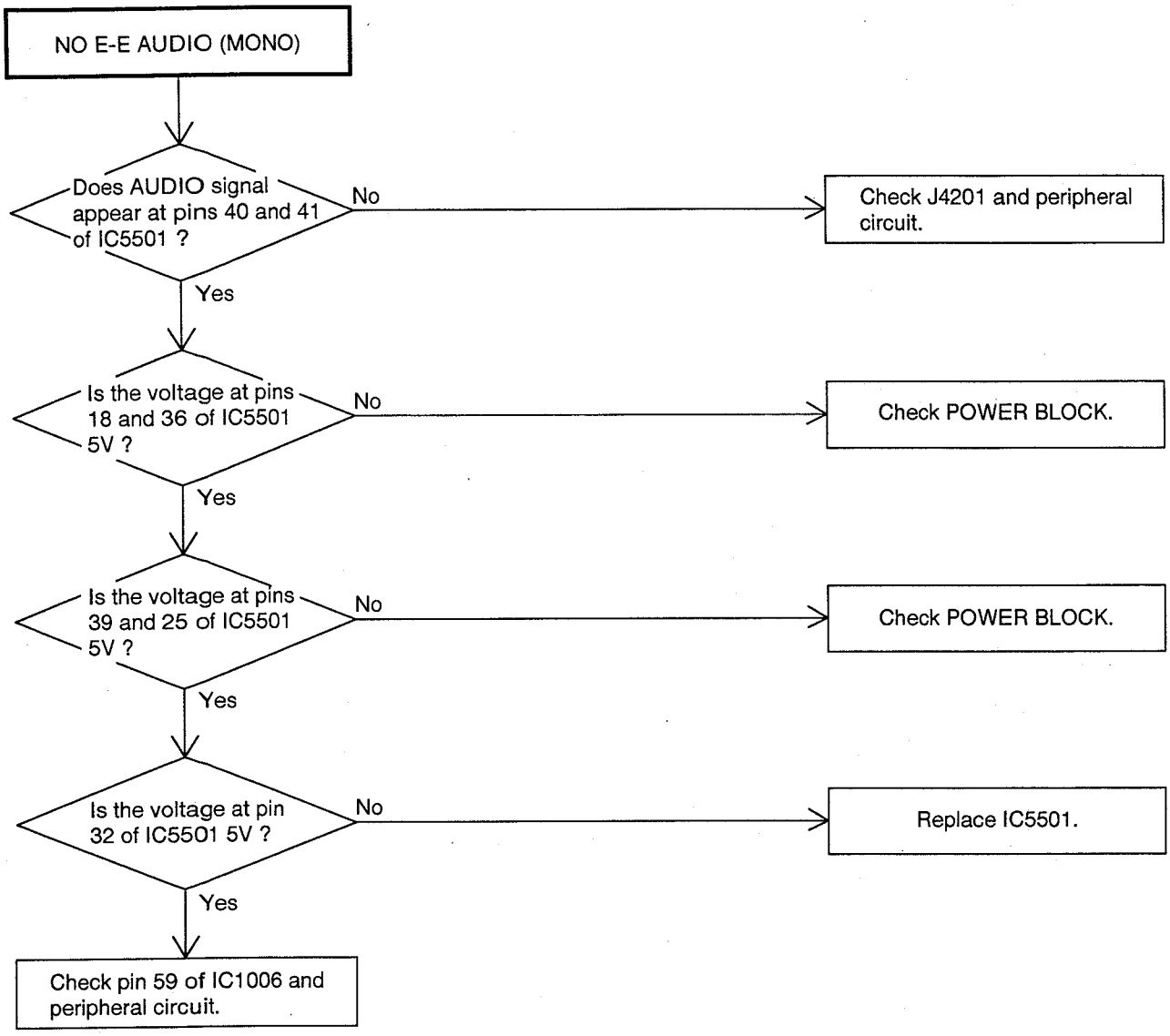
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS,BUT NO VIDEO RECORDED FROM INPUT JACK OR TUNER
Does VIDEO signal appear at pin 42 of IC4001 ?
No
Check the circuit from VIDEO input jack to IC4001, from Tuner Pack to IC4001.
Yes
Does the VIDEO signal appear at pin 30 of IC4001 ?
No
Is the voltage at pin 55 of IC4001 less than 3.8V ?
No
Is the voltage at pin 58 of IC1006 5V ?
No
Yes
Yes
Yes
Check the peripheral circuit of pin 11 of IC4001.
Check Q1013 and Q1019.
Replace IC1006.
Does FM signal appear at pin 14 of IC4001 ?
No
Replace IC4001.
Yes
Does the REC current appears at pin 15 of IC4101 during the REC ?
No
Replace IC4101.
Yes
Check CYLINDER UNIT and HEAD AMP circuit.

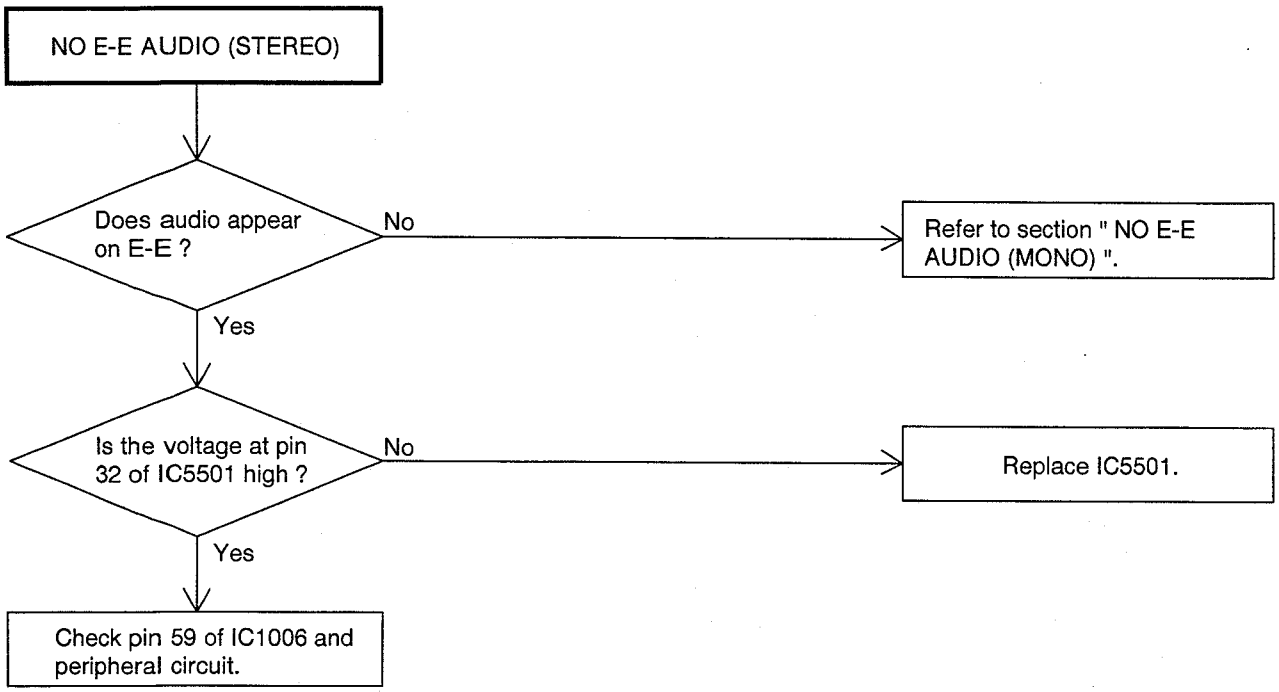
TROUBLESHOOTING GUIDE



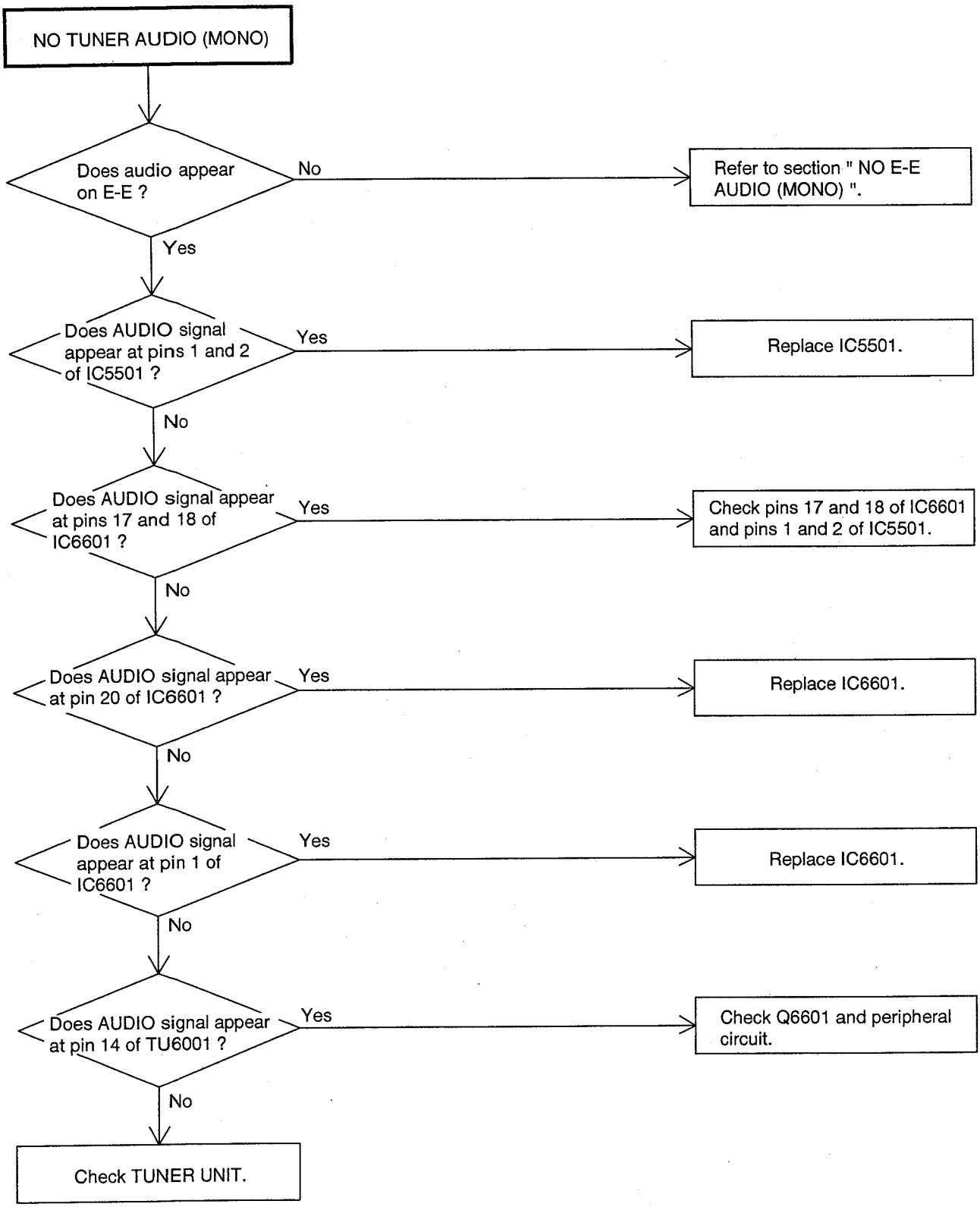
TROUBLESHOOTING GUIDE


NO E-E AUDIO (MONO)
Does AUDIO signal appear at pins 40 and 41 of IC5501 ?
No
Check J4201 and peripheral circuit.
Yes
Is the voltage at pins 18 and 36 of IC5501 5V ?
No
Check POWER BLOCK.
Yes
Is the voltage at pins 39 and 25 of IC5501 5V ?
No
Check POWER BLOCK.
Yes
Is the voltage at pin 32 of IC5501 5V ?
No
Replace IC5501.
Yes
Check pin 59 of IC1006 and peripheral circuit.

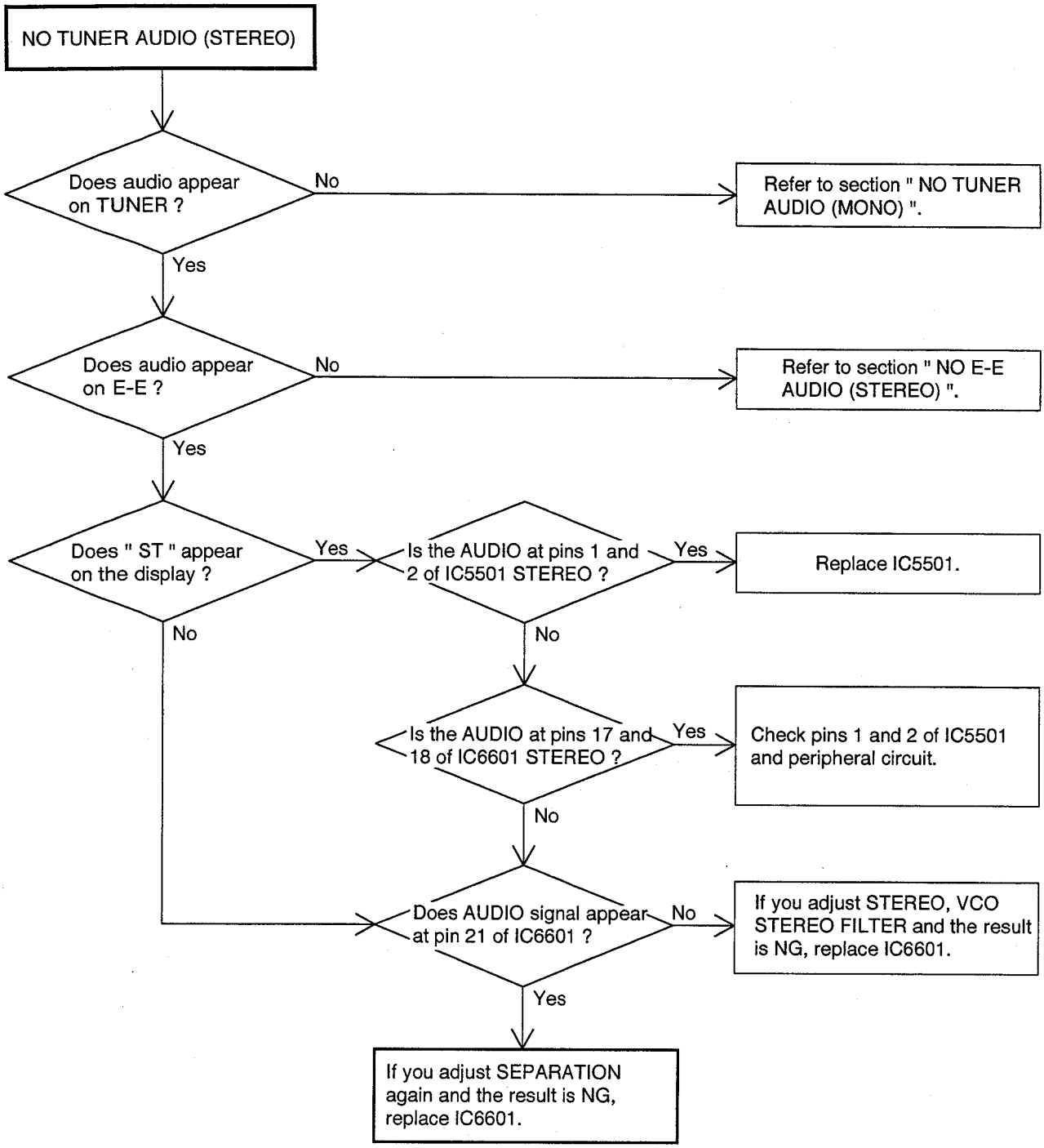
TROUBLESHOOTING GUIDE


NO E-E AUDIO (STEREO)
Does audio appear on E-E ?
No
Refer to section " NO E-E AUDIO (MONO) ".
Yes
Is the voltage at pin 32 of IC5501 high ?
No
Replace IC5501.
Yes
Check pin 59 of IC1006 and peripheral circuit.

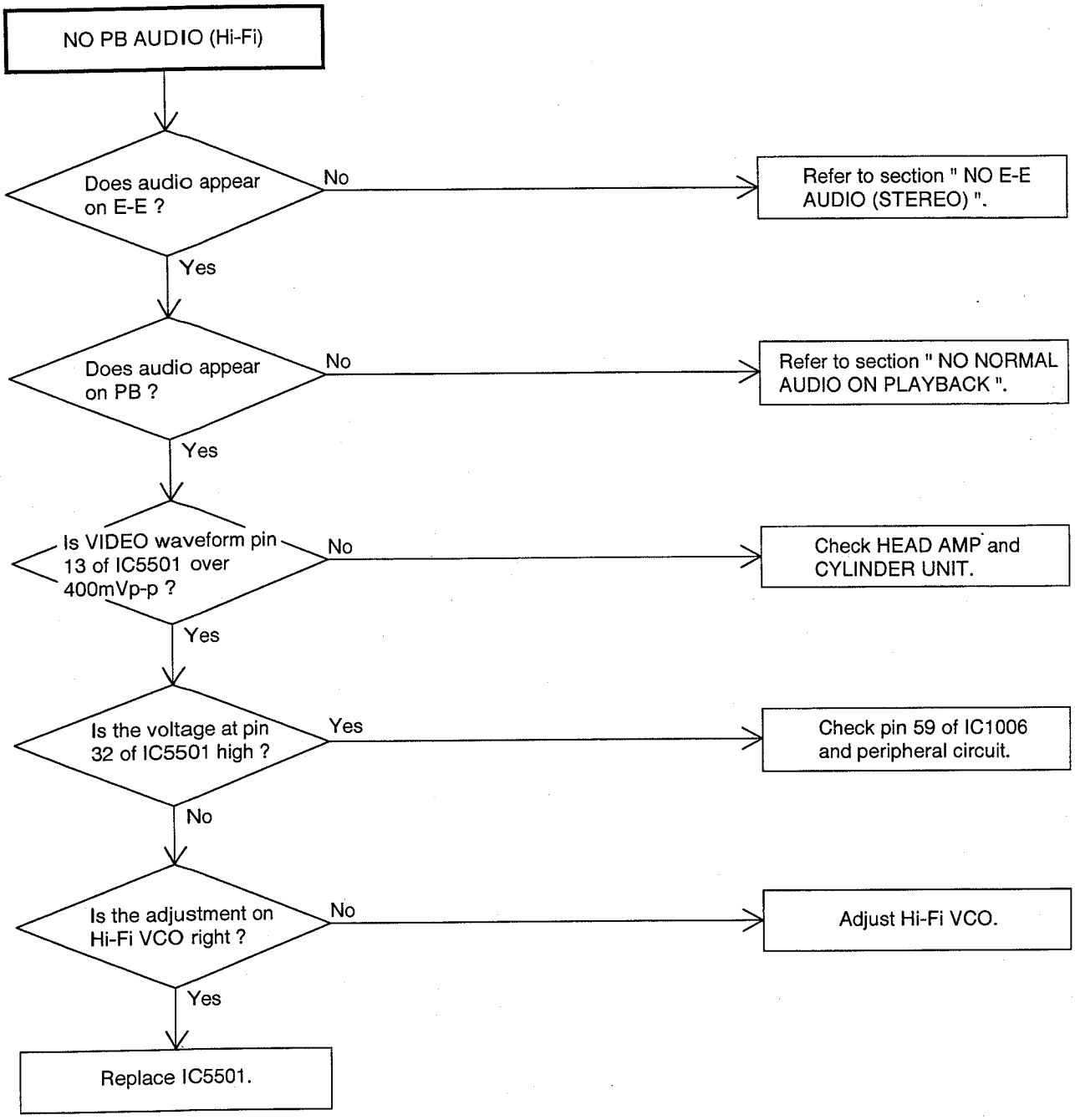
TROUBLESHOOTING GUIDE


NO TUNER AUDIO (MONO)
Does audio appear on E-E ?
No
Refer to section " NO E-E AUDIO (MONO) ".
Yes
Does AUDIO signal appear at pins 1 and 2 of IC5501 ?
Yes
Replace IC5501.
No
Does AUDIO signal appear at pins 17 and 18 of IC6601 ?
Yes
Check pins 17 and 18 of IC6601 and pins 1 and 2 of IC5501.
No
Does AUDIO signal appear at pin 20 of IC6601 ?
Yes
Replace IC6601.
No
Does AUDIO signal appear at pin 1 of IC6601 ?
Yes
Replace IC6601.
No
Does AUDIO signal appear at pin 14 of TU6001 ?
Yes
Check Q6601 and peripheral circuit.
No
Check TUNER UNIT.

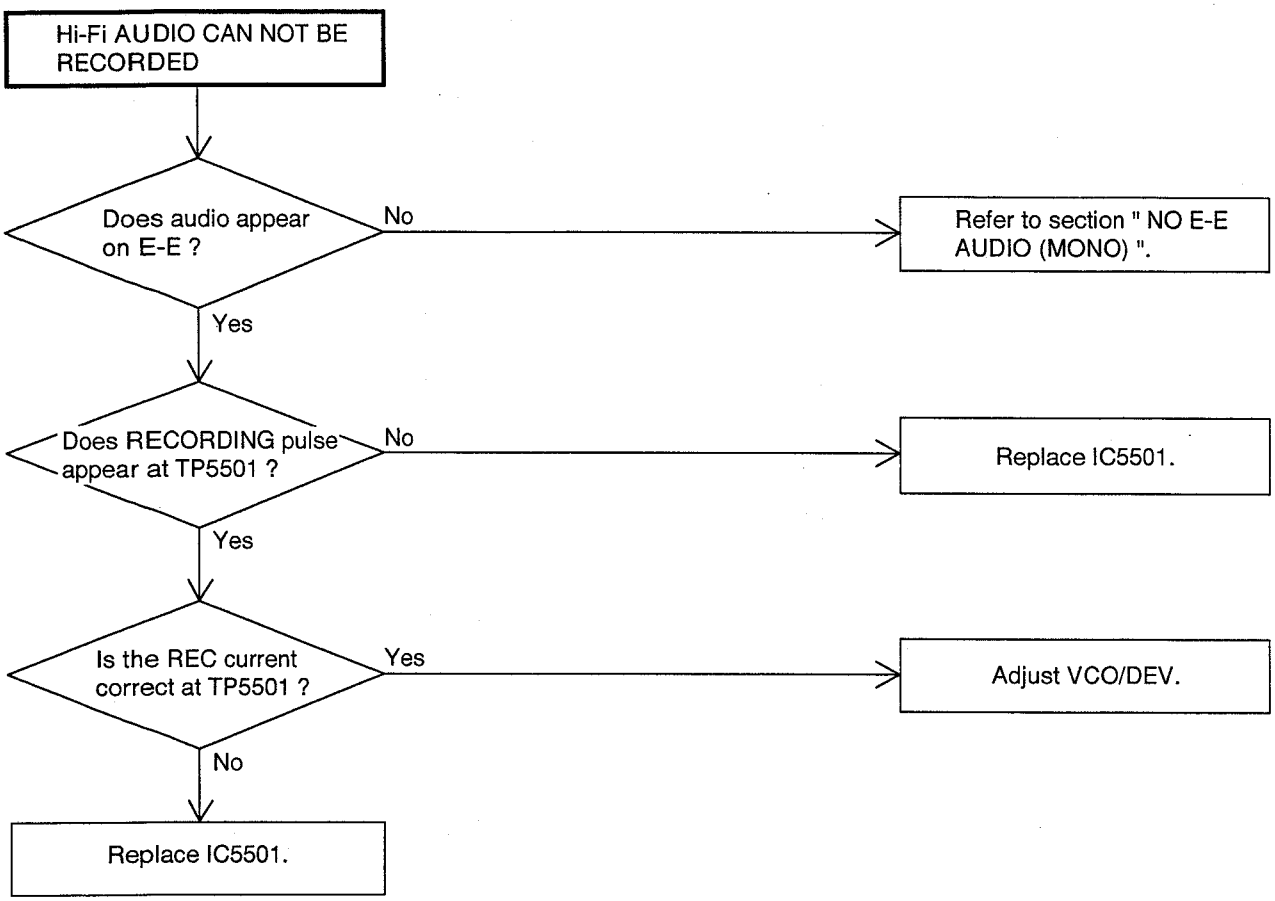
TROUBLESHOOTING GUIDE


NO TUNER AUDIO (STEREO)
Does audio appear on TUNER ?
No
Refer to section " NO TUNER AUDIO (MONO) ".
Yes
Does audio appear on E-E ?
No
Refer to section " NO E-E AUDIO (STEREO) ".
Yes
Does " ST " appear on the display ?
Yes
Is the AUDIO at pins 1 and 2 of IC5501 STEREO ?
Yes
Replace IC5501.
No
No
Is the AUDIO at pins 17 and 18 of IC6601 STEREO ?
Yes
Check pins 1 and 2 of IC5501 and peripheral circuit.
No
Does AUDIO signal appear at pin 21 of IC6601 ?
No
If you adjust STEREO, VCO STEREO FILTER and the result is NG, replace IC6601.
Yes
If you adjust SEPARATION again and the result is NG, replace IC6601.

TROUBLESHOOTING GUIDE


NO PB AUDIO (Hi-Fi)
Does audio appear on E-E ?
No
Refer to section " NO E-E AUDIO (STEREO) ".
Yes
Does audio appear on PB ?
No
Refer to section " NO NORMAL AUDIO ON PLAYBACK ".
Yes
Is VIDEO waveform pin 13 of IC5501 over 400mVp-p ?
No
Check HEAD AMP and CYLINDER UNIT.
Yes
Is the voltage at pin 32 of IC5501 high ?
Yes
Check pin 59 of IC1006 and peripheral circuit.
No
Is the adjustment on Hi-Fi VCO right ?
No
Adjust Hi-Fi VCO.
Yes
Replace IC5501.

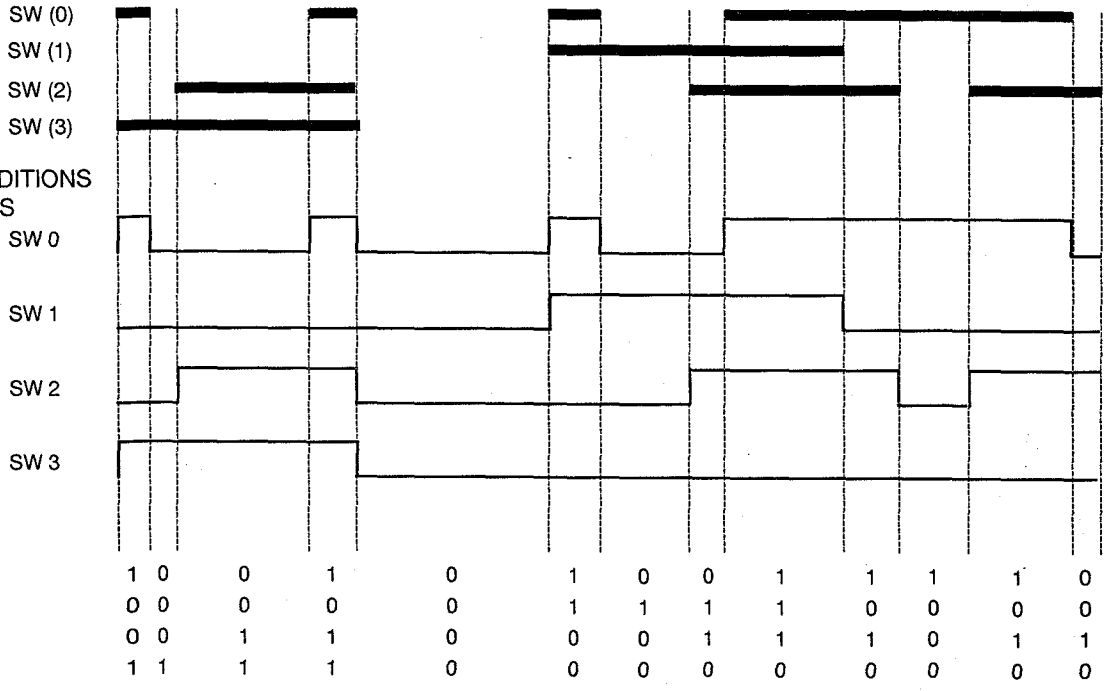
TROUBLESHOOTING GUIDE



SYSTEM SWITCH MODE

SWITCH COMPOSITION

SWITCH PATTERN



MODE SWITCH				DECK MODE
SW 3	SW 2	SW 1	SW 0	
1	0	0	1	EJECT
1	0	0	0	CASSETTE UP
1	1	0	0	CASSETTE DOWN
1	1	0	1	IDLE
0	0	0	0	※
0	0	1	1	UL START
0	0	1	0	VSR
0	1	1	0	RVS STILL
0	1	1	1	FWD STILL
0	1	0	1	PLAY/REC/STOP 1
0	0	0	1	STOP 2
0	1	0	1	FF / REW
0	1	0	0	

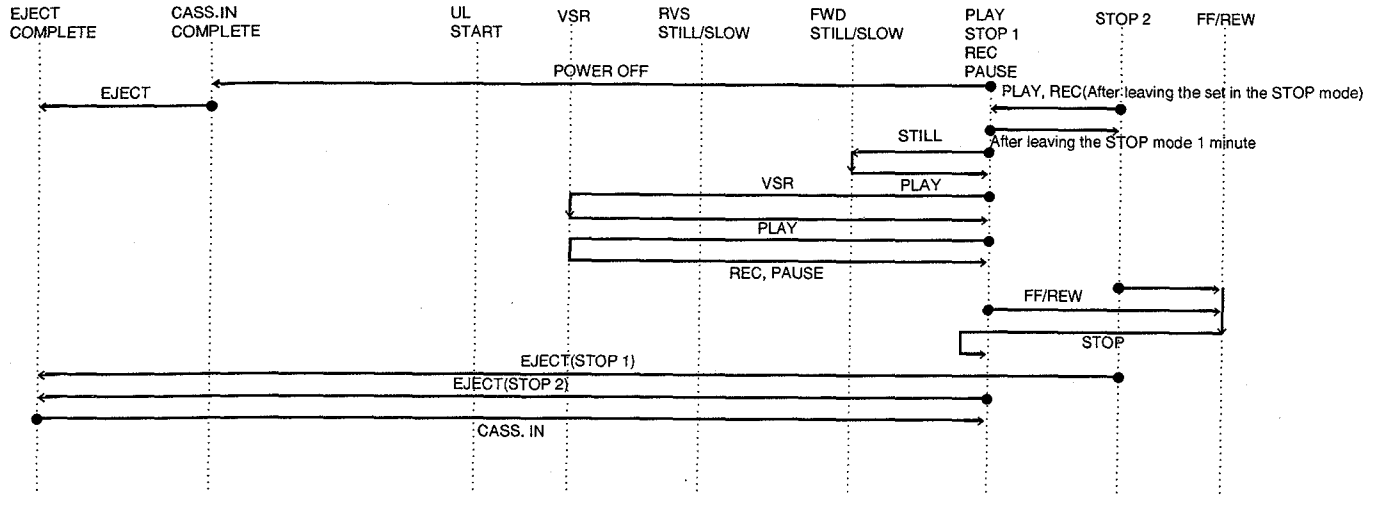
MODE SWITCH				DECK MODE
SW 3	SW 2	SW 1	SW 0	
0	5	5	0	EJECT
5	5	5	0	STOP(Right after)
5	0	5	0	STOP(After 1 minute)
5	5	5	0	PLAY
5	5	5	0	REC (After selecting the Cassette)
5	0	5	5	FF (After selecting the Cassette)
5	0	5	5	REW
5	5	5	0	VSF
5	5	0	5	VSR
5	0	0	0	STILL(PLAY)
5	5	5	0	PAUSE(REC)
0	0	5	0	POWER OFF (TAPE IN)
0	0	5	0	POWER ON (TAPE IN)

OUTPUT LIST OF MECHANICAL SWITCHES

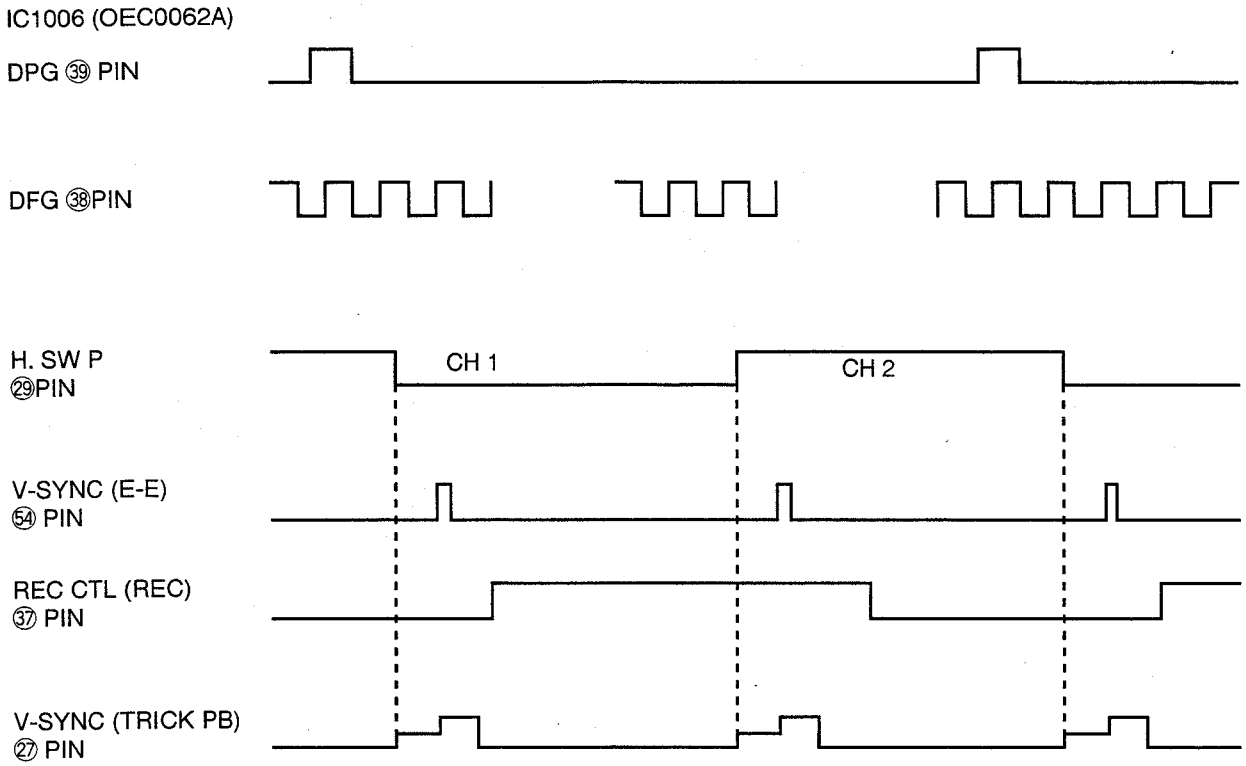
VOLTAGE (V)

※ : IT IS ONLY PASSING POINT, THERE IS NO DECK MODE.

MODE SEPARATION



SERVO TIMING CHART



※ WAVEFORM CHANGES DEPENDED ON THE TAPE SPEED

IC DESCRIPTIONS

OEC0062A

Pin No.	Pin Name	I/O	Description
1	FS CS	O	Write in timing output to F-Syn tuner.
2	A VSS	—	Ground
3	BOT-H	I	Tape start sensor input signal.
4	R SLW OFFS	I	Input for Slow Tracking Offset.
5	CAS/SRVCE	I	Input of CASS DOWN, TAB switch and setting of service mode.
6	PG MM	I	Input voltage from Variable Resistor of PG SHIFTER.
7	MOTOR SEL	I	Ground
8	KEY-B	I	Key B input.
9	KEY-A	I	Key A input.
10	HI ENV.	I	Input for the Recognition of Hi-Fi Track and the Selection of Hi-Fi Tracking.
11	AFT SC	I	AFT S Curve input for tuner.
12	EOT-H	I	Tape end sensor input signal.
13	SLOW OFFS	I	Input of tracking offset amount at SLOW.
14	V. ENV.	I	Input terminal of video RF envelope.
15	AVDD	—	ON/OFF control to Micon AD section.
16	$\overline{\text{RESET}}$	—	RESET will be done when the voltage goes to HIGH after the reset signal.
17	VCR-H	O	ON/OFF control for RF Modulator.
18	SP-L	O	Output the HIGH at tape speed.
19	LP-L	O	
20	EP-L	O	
21	OSD-H	O	Output the "H" when the blueback is appeared such as MENU etc. and also at the E-E except REC.
22	DVDD	—	Power Supply Terminal to the Logic section (CPU etc.).
23	Hi-Fi H. SW	O	Hi-Fi Head Switch Output.
24	H. SW	O	Video Head Switch Output.
25	CAP PWM	O	PWM output of Capstan control.
26	DRM PWM	O	PWM output of Cylinder control.
27	V-SYNC	O	Virtual V Sync output.
28	C.ROTARY	O	Color Rotary Control output on 4 heads.
29	H. AMP SW	O	Switching output of Head Amp SW on 4 heads.
30	COMP	I	Comparison Results input of Playack Envelope level on SP/LP heads(4 heads).
31	CTL-H(+)	—	Input terminal of Control Head.
32	CTL-H(-)	—	Output terminal of Control Head.

IC DESCRIPTIONS

OEC0062A

Pin No.	Pin Name	I/O	Description
33	VSS(SV)	—	Ground
34	CTL. GAIN SW	—	Output terminal for gain.
35	CTL. AMP(–)	—	Output terminal for amp control.
36	CTL. BIAS	—	Output terminal for bias.
37	CTL. AMP	—	Output terminal for amp out.
38	D-FG	I	Input terminal for DRUM FG signal detection.
39	D-PG	I	Input terminal for DRUM PG signal detection.
40	C-FG	I	Input terminal for CAPSTAN FG signal detection.
41	VCC(SV)	—	Power Supply Terminal to the Micon Servo section.
42	VCC(OSD)	—	Power Supply Terminal to the Micon OSD section.
43	CV IN	I	Composite Video input terminal.
44	V. REF	O	Capacity connection for Sync Chip Clamp of composite Video input.
45	CV OUT	O	Composite Video output.
46	CHR BIAS	I	Brightness (Brilliant) level setting of OSD character indications.
47	AFC LPF	I	Condenser connection for AFC LPF.
48	AFC OSC	I	Pulse capacity connection for internal VCO.
49	VSS(OSD)	—	Ground
50	DOSC IN	I	Dot Clock pulse(Oscillator) of OSD character indications.
51	DOSC OUT	O	Dot Clock input of OSD character indications.
52	4 FSC OUT	O	4 FSC pulse.
53	4 FSC IN	I	4 FSC input.
54	SYNC	I	Input terminal for composite SYNC.
55	SENS LED	O	Tape end sensor LED.
56	V. REC ST-H	O	On control of A/V recording (Whole width erase) circuit.
57	REC-H	O	Not used.
58	AV EE-H	O	Recording/Playback monitor switching of Audio circuit.
59	A. MUTE-H	O	Mute signal of audio mute.
60	CAP FWD-H	O	Capstan forward and backward command.
61	CAP LIMIT	O	Switch the maximum output current of the Capstan Motor.
62	CAP FULL	O	Output the HIGH during the acceleration force of capstan motor at SLOW mode.
63	LDM RVS-H	O	Output signal to control the rotation direction of the loading motor.
64	LDM FWD-H	O	

IC DESCRIPTIONS

OEC0062A

Pin No.	Pin Name	I/O	Description
65	RF CH OUT	—	Not used.
66	A_CTL_B	—	Not used.
67	AUTO DET	O	Not used.
68	TEST	—	Ground
69	X2	O	Subclock pulse (32.768 KHz).
70	X1	I	Subclock pulse (32.768 KHz).
71	D. VSS	—	Ground
72	OSC 1	I	Connect the main crystal(10MHz).
73	OSC 2	O	
74	RENTAL H	O	Not used.
75	SUB-RESET	O	Output the reset signal to the SUB MICON during JOG/STILL playback
76	CYL DRIVE	O	Output terminal for drum motor voltage drive.
77	VIDEO MUTE	O	Not used.
78	H CLK	O	Output CLK to the SUB MICON during JOG/STILL playback
79	H SO	I	Input DATA from the SUB MICON during JOG/STILL playback
80	H SI	O	Output DATA to the SUB MICON during JOG/STILL playback
81	EXT-H	O	Source switching of A/V signal input.
82	REM_IN	I	Receive the remote control signal.
83	SP/LP/EP	O	Value S output of Playback/Recording tape speed.
84	POWER ON-H	O	For control the user power switch ON/OFF.
85	TRICK PB-H	O	Special effect playback. (CUE/REVIEW/STILL/SLOW etc.)
86	JUST CLOCK	O	Not used.
87	REEL T	I	Input terminal of reel sensor take up.
88	REEL S	I	Input terminal of reel sensor supply.
89	POWER FAIL	I	50/60 Hz pulse input made by AC power.
90	MS SW-3	I	Input the mecha state switch terminal 4.
91	MS SW-2	I	Input the mecha state switch terminal 3.
92	MS SW-1	I	Input the mecha state switch terminal 2.
93	MS SW-0	I	Input the mecha state switch terminal 1.
94	FL-CS	I	User switch for the auto start ON/OFF.
95	FL-SCK	O	Timing output of data transmission and receiving with FIP driver.
96	FL-SDI	I	Receiving of Key switch data from FIP driver.

IC DESCRIPTIONS

OEC0062A

Pin No.	Pin Name	I/O	Description
97	FL-SDO	O	Indication data and mode transmission to FIP driver.
98	FS/IIC_CLK	O	Clock output to F syn tuner.
99	IIC DATA	I/O	DATA input/output to Hi-Fi IC.
100	FS_DATA	O	Data transmission to F syn tuner.

SEMICONDUCTOR BASE CONNECTION

DIODE

1S2472T-77
1SS133T-77
GMA-02-BT
MTZJ5.1CT-77
MTZJ6.8CT-77
MTZJ7.5BT-77
MTZJ8.2CTT-77
UZ-18BCB-TA
UZP-30BK2

S1NB60

SLR-938C-4-AB

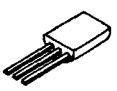
KLG114L-FAJ

11E1TA1B2
11EQS04TA2B5

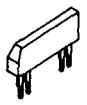
21DQ04-TA2B1
21DQ09-TA2B1
DSK10E-BT
EG-01A

LN11WP23-(TDA)

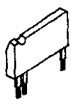
IC



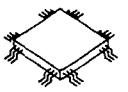
PST600H



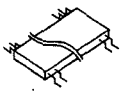
LA7016



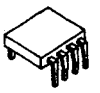
OEC9029A



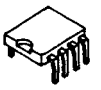
BH7801AK-E2
LA71003M-MPB
OEC0062A
UPD16313



LA70020M

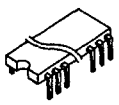


LA6358NML-TP-T1
LC89962

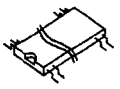


ST24C02FB6

TRANSISTOR



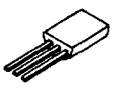
OEC0061A



UPC1093J-T
UPC1876GT

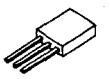
TLP621(GR)
TLP621(GB)

GP1S94



2SA1527-AA
2SA1529-AA
2SA984K(E,F)-AA
2SB926(S,T)-AA
2SC2274(E,F)-AA
2SC2872S
2SC536K(F,G)-NP-
2SD734(E,F)-AA

2SC1740SP(R,S)TP
DTA114ESTP

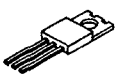


2SC5291(S,T)-AY
2SD2259

2SA1037KT147(R,S)
DTC124EKAT146
DTC144EKAT146
KRC102RTK
KRC103RTK

2SB644

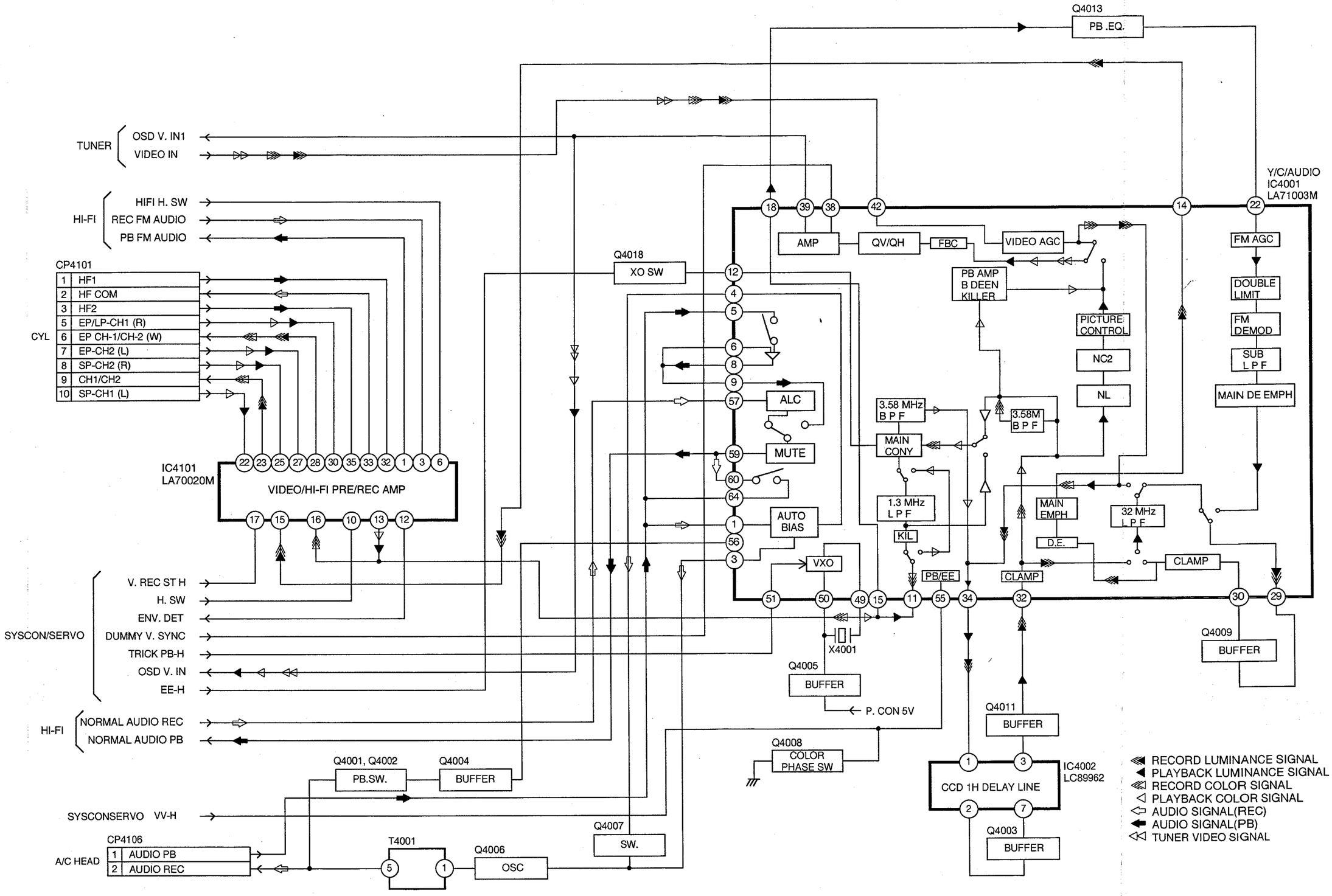
RPT-38PB113



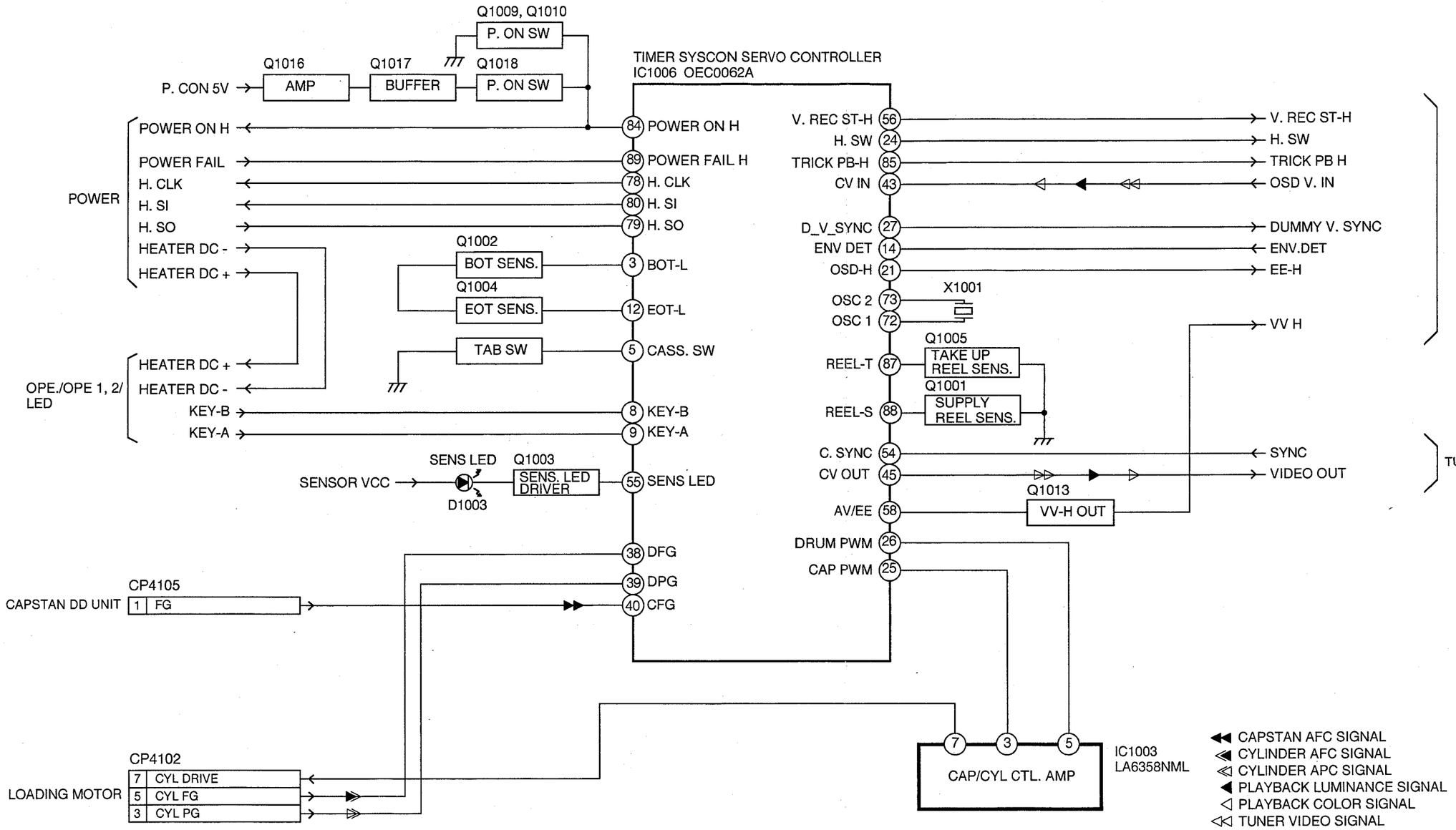
2SC4160 OEC

2SC2412AKT146R,S

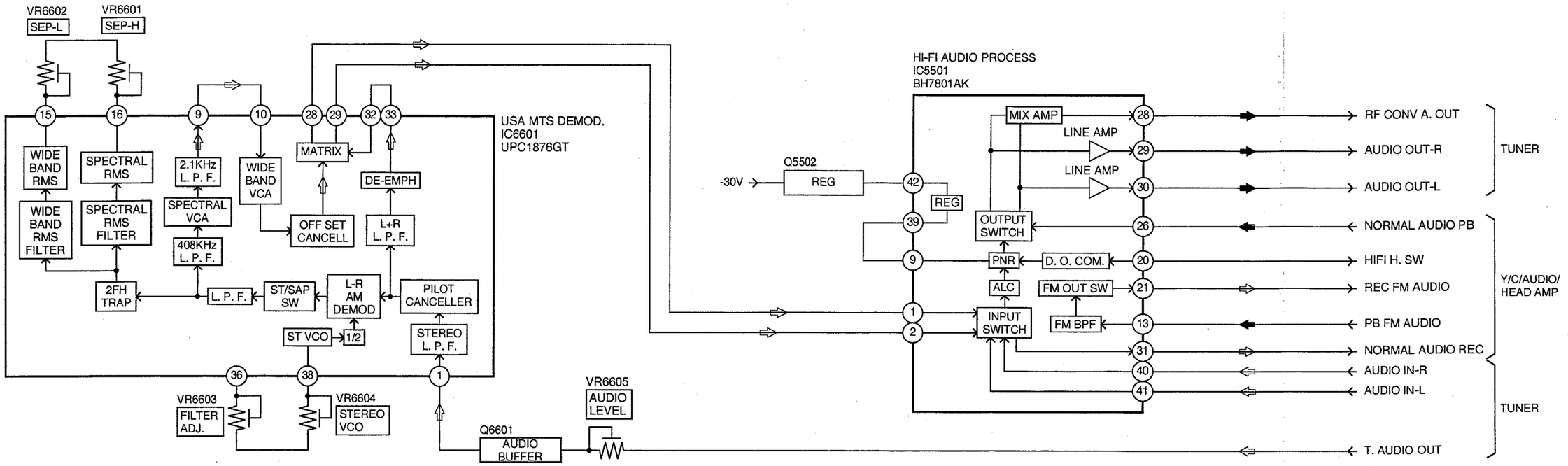
Y/C／AUDIO／HEAD AMP BLOCK DIAGRAM



SYSTEM CONTROL／SERVO BLOCK DIAGRAM

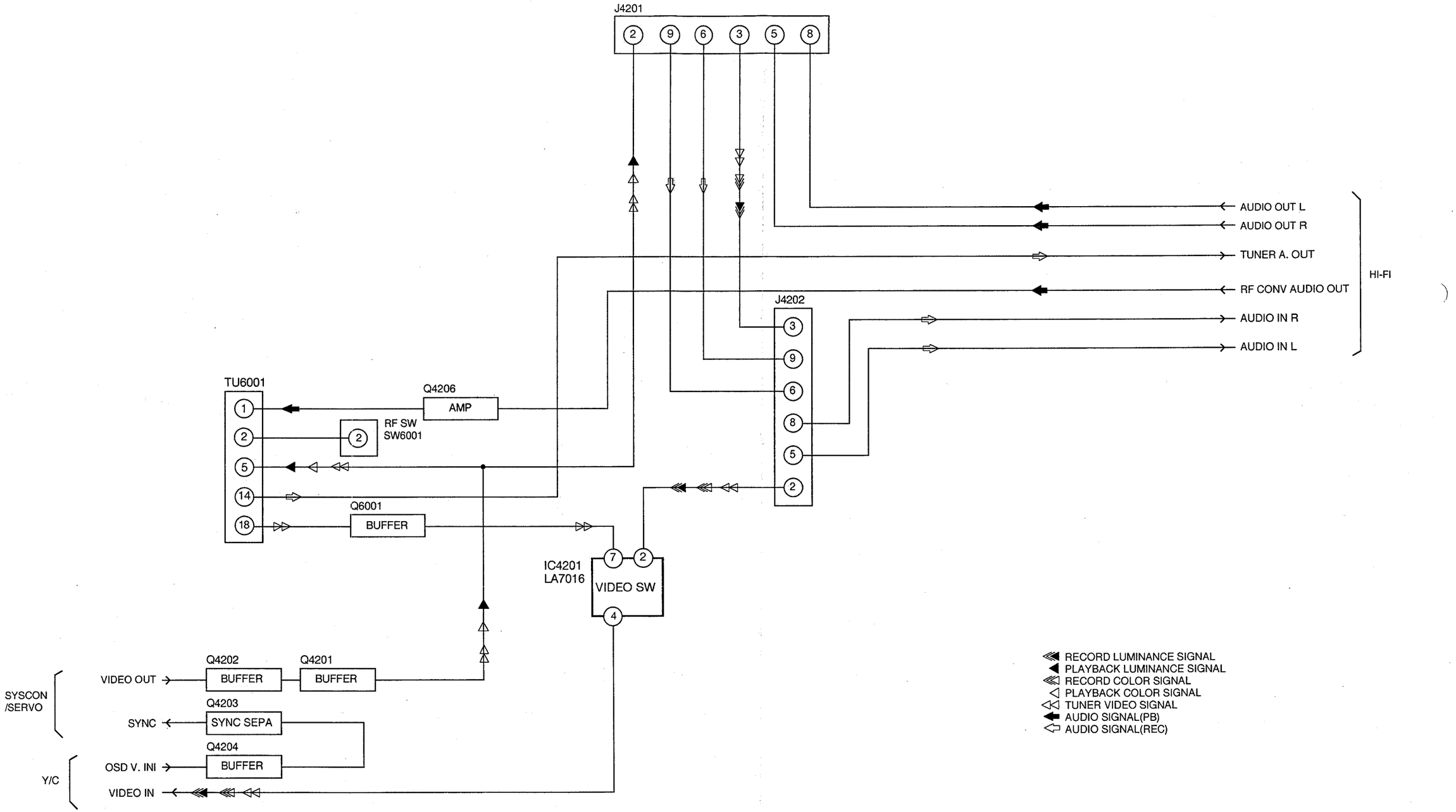


HI-FI BLOCK DIAGRAM



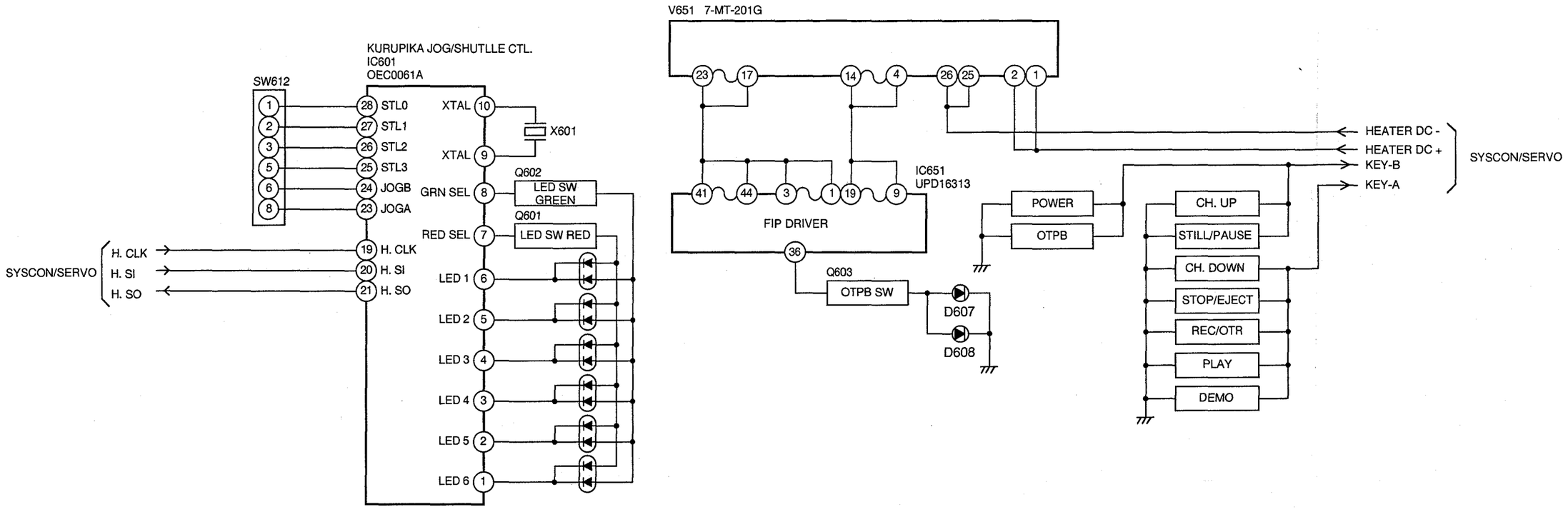
AUDIO SIGNAL(PB)
AUDIO SIGNAL(REC)

TUNER BLOCK DIAGRAM

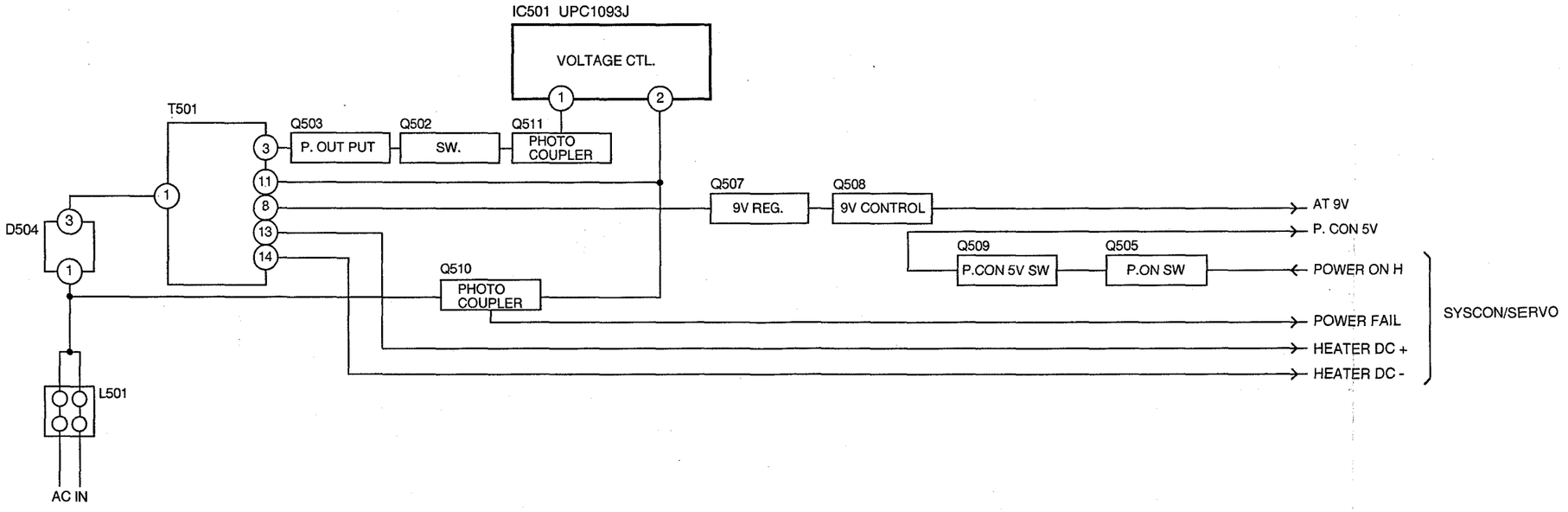


RECORD LUMINANCE SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
PLAYBACK COLOR SIGNAL
TUNER VIDEO SIGNAL
AUDIO SIGNAL(PB)
AUDIO SIGNAL(REC)

OPERATION／OPERATION 1, 2／LED BLOCK DIAGRAM

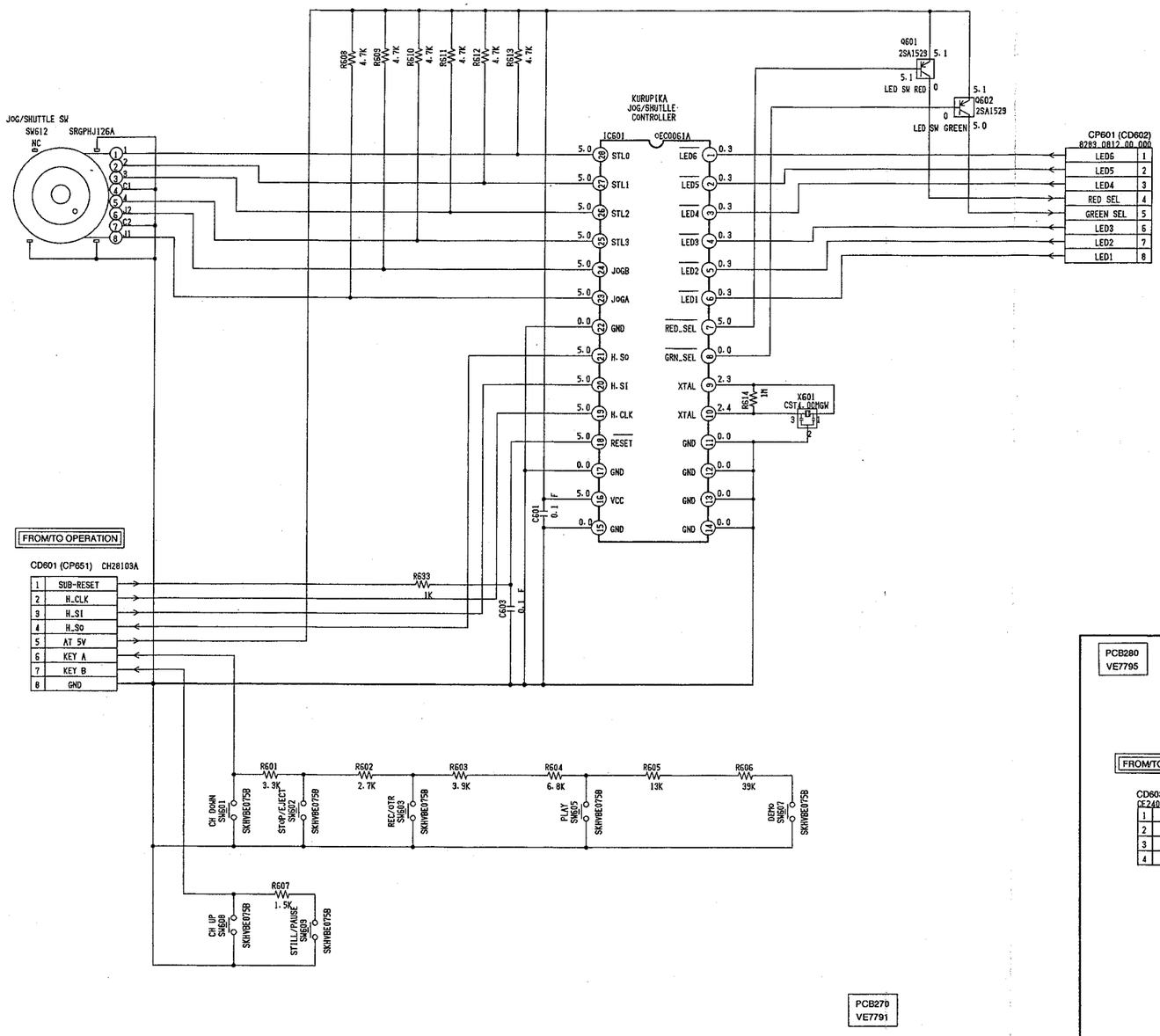


POWER BLOCK DIAGRAM

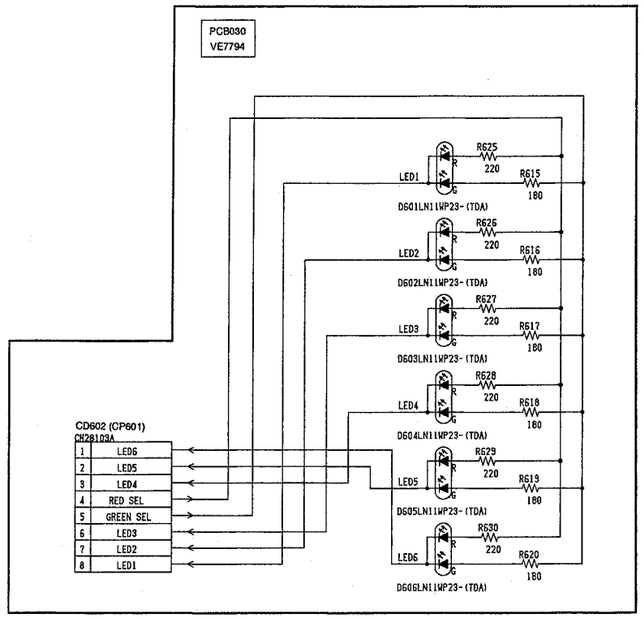


OPERATION 1, 2／LED SCHEMATIC DIAGRAM

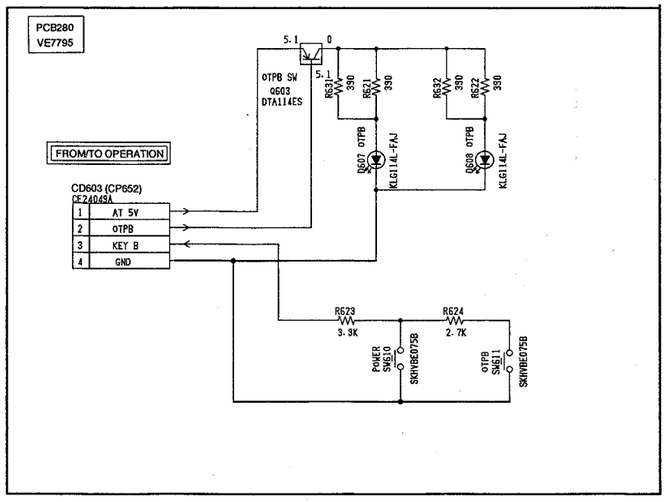
(OPERATION 1 PCB)



(LED PCB)



(OPERATION 2 PCB)



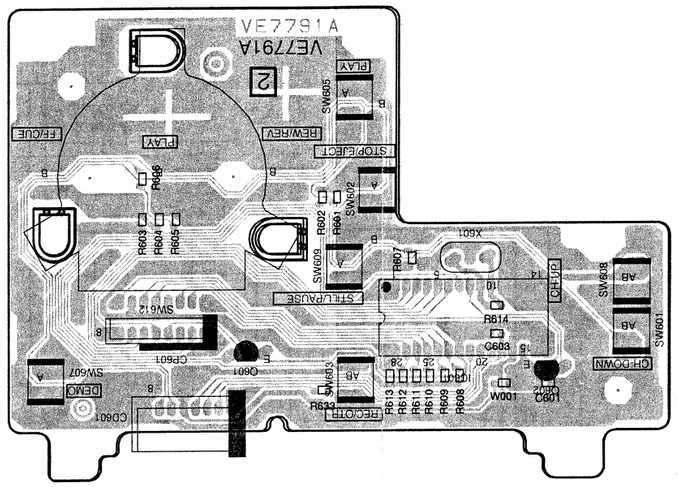
PCB270
VE7791

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

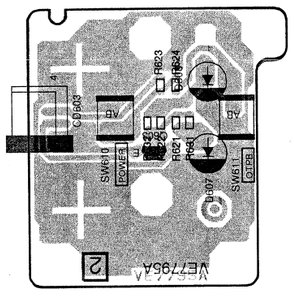
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PRINTED CIRCUIT BOARDS

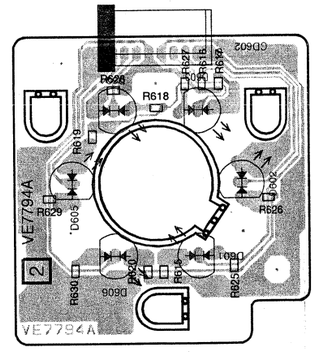
OPERATION 1



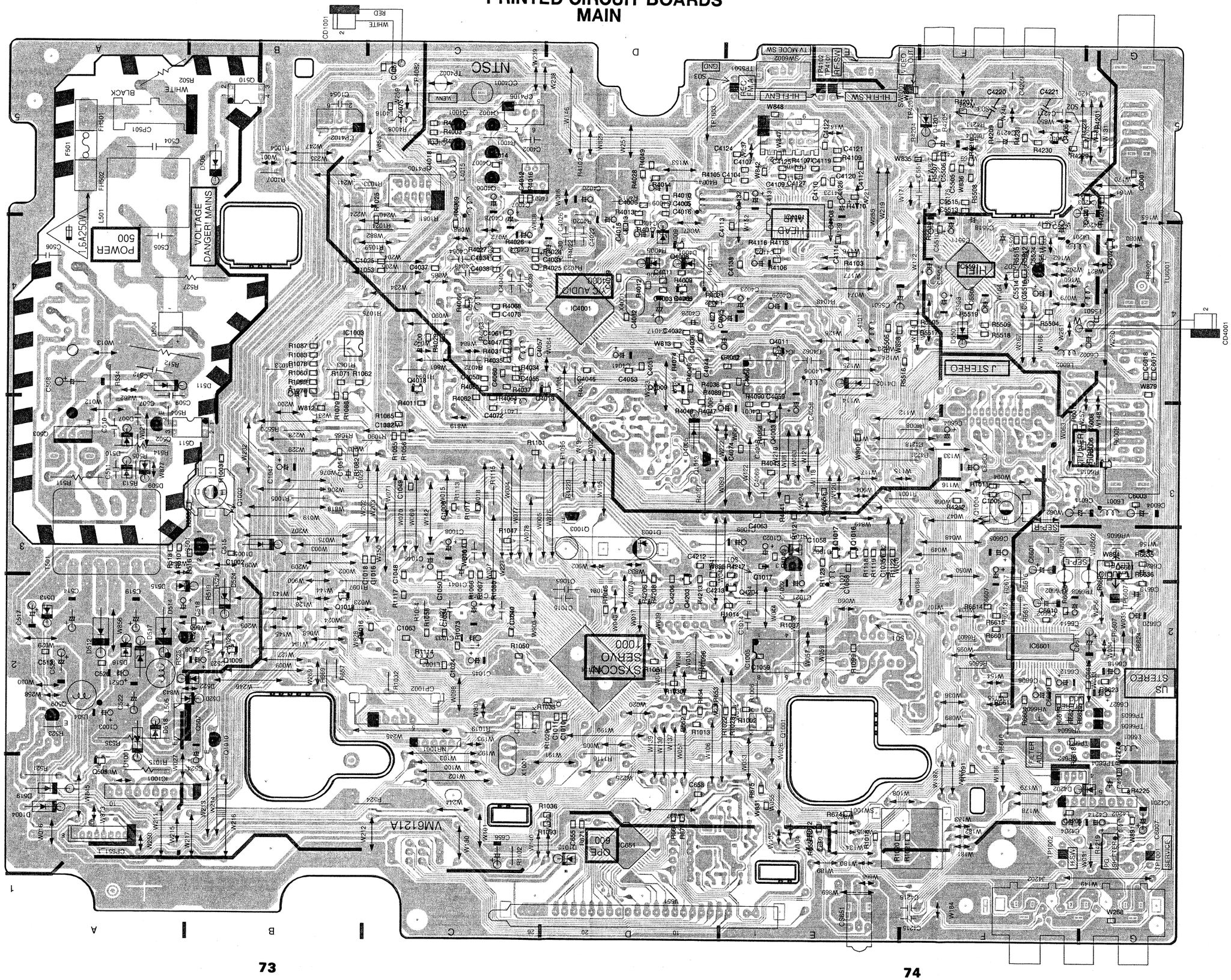
OPERATION 2



LED

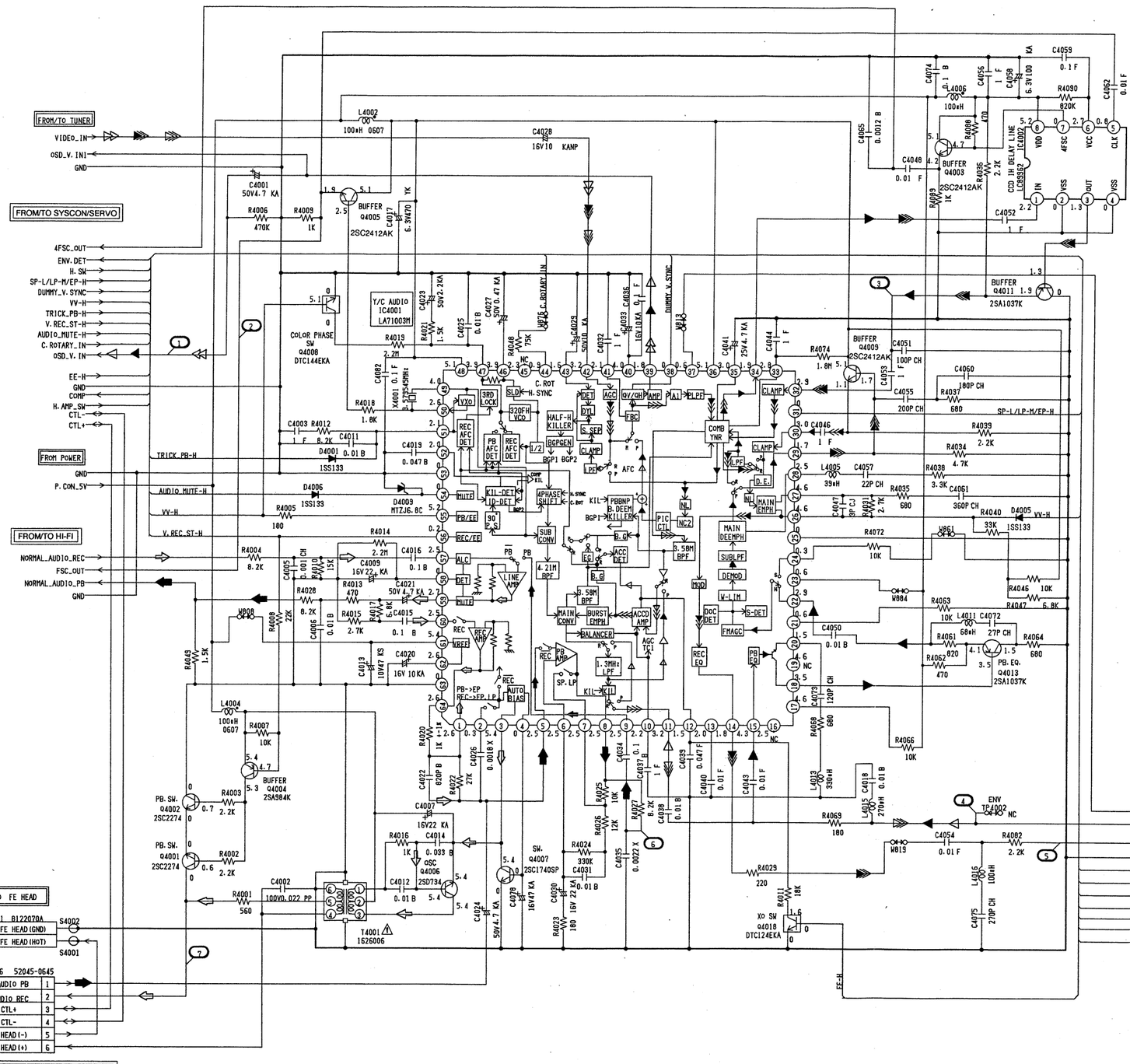


PRINTED CIRCUIT BOARDS
MAIN



Y/C／AUDIO SCHEMATIC DIAGRAM

(MAIN PCB)



RECORD LUMINANCE SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
PLAYBACK COLOR SIGNAL
TUNER VIDEO SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)

NOTE: THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

VV: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

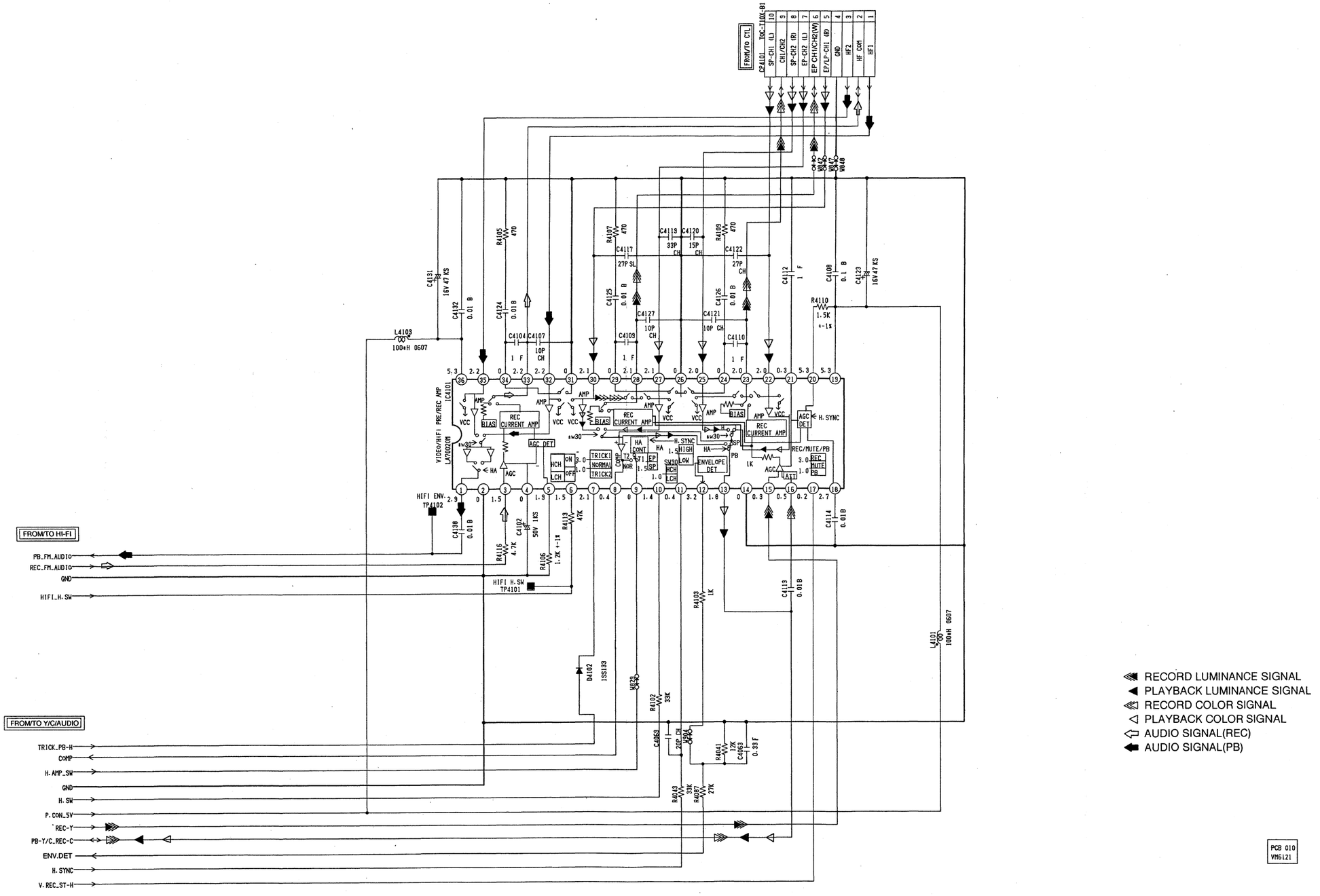
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

HEAD AMP SCHEMATIC DIAGRAM

(MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

SYSTEM CONTROL／SERVO SCHEMATIC DIAGRAM

(MAIN PCB)

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY。

◀ PLAYBACK LUMINANCE SIGNAL
◁ PLAYBACK COLOR SIGNAL
◀◁ TUNER VIDEO SIGNAL
◀◀ CAPSTAN AFC SIGNAL
◀◀ CYLINDER AFC SIGNAL
◁◁ CYLINDER APC SIGNAL

FROM/TO POWER

FROM/TO TUNER

FROM/TO Y/C/AUDIO

FROM/TO HI-FI

FROM/TO OPERATION

FROM/TO CYL

FROM/TO CAPSTAN

FROM MODE SW

TO LOADING

⚠ LOADING MOTOR DRIVER IC1001 0EC9029A

COTROL LOGIC

TSD

POWER SAVE

SUPPLY REEL SENS Q1001 GP1S94

TAKE UP REEL SENS Q1005 GP1S94

SENS LED DRIVER Q1003 2SC2873S

BOT SENSOR Q1002 SLR-338C-4-AB

EOT SENSOR Q1004 RPT-38PB113

Q1015 RPT-38PB113

SW1001 HXW0394-010010

CD1001 CH22044A

1	LDM+
2	LDM-

CP4102 52045-0745

7	CYL DRIVE
6	CYL GND
5	CYL FG
4	CYL +B
3	CYL PG
2	GND
1	CYL VCC 5V

CP4105 TKC-G10P-A1

1	FG
2	CAP.M F/R
3	V. REF
4	MOTOR GND
5	I LIMIT
6	VCO(12V)
7	GND
8	VCC(5V)
9	CTL
10	NC

TIMER SYSCON SERVO CONTROLLER IC1006 0EC0062A

SYSTEM RESET IC1002 PST600H

MODE SW CP1002 TAS-X05X-D1

BUFFER Q1017 2SC2412 AK

AMP Q1016 2SC2412 AK

P.ON SW Q1018 2SA1037K

P.ON SW Q1009 KRC103R

P.ON SW Q1010 2SA1527

VV-H OUT Q1013 2SA1527

CH DATA MEMORY IC1005 S-24C02FDS

TUNER DEMODULATOR AND RF C TU5001 TMLH2-007A

A. IN	1
CH	2
MB	3
CONTROL	4
V. IN	5
PB 5V	6
32V	7
CLOCK	8
DATA	9
CE	10
	11 NC
	12 NC
9V	13
A. OUT	14
GND	15
AFT	16
	17 NC
V. OUT	18

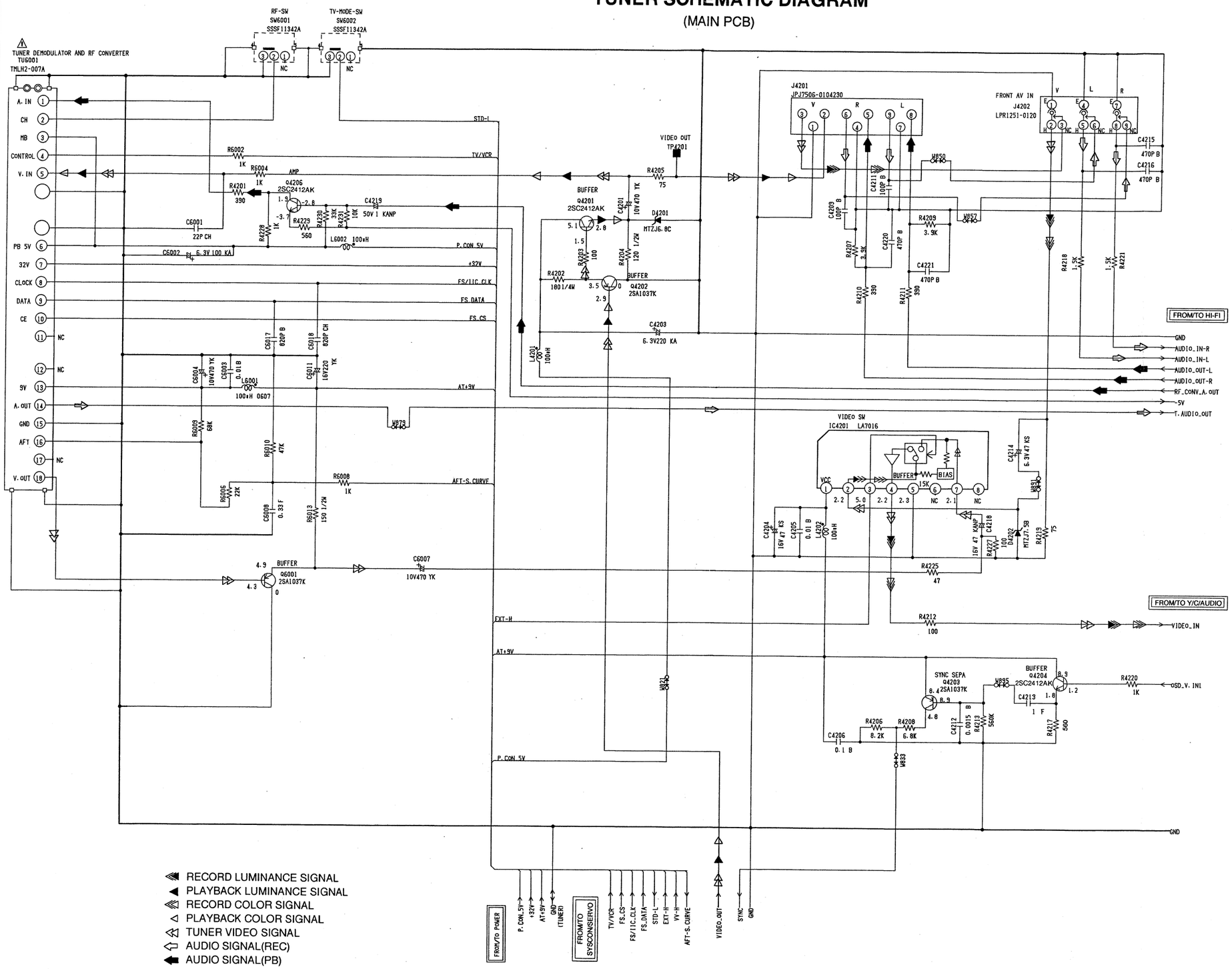
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

VV: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

PCB 010 VM6121

TUNER SCHEMATIC DIAGRAM

(MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

VV: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

HI-FI SCHEMATIC DIAGRAM

(MAIN PCB)

AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)

NOTE: THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB 010
VM6121

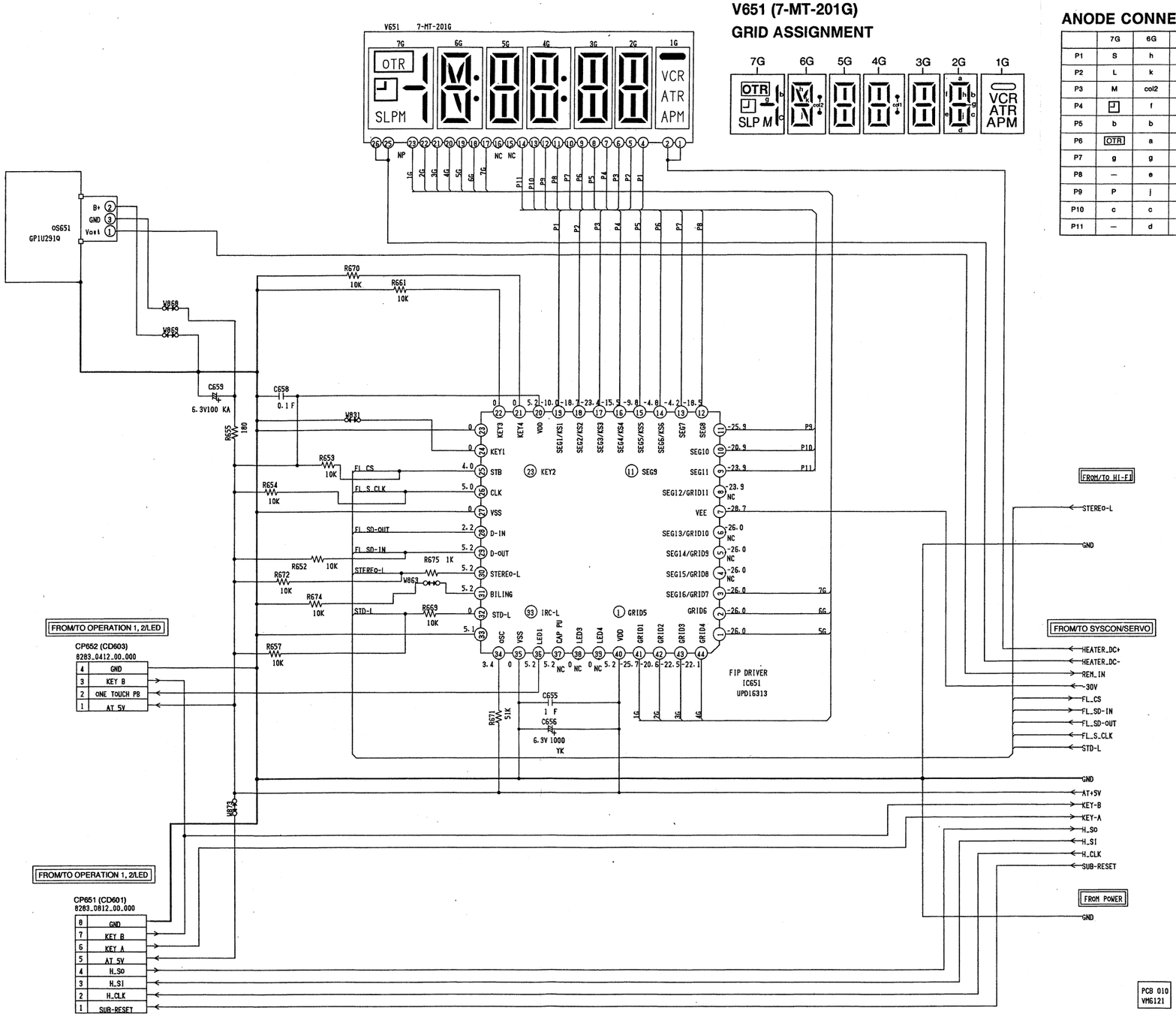
OPERATION SCHEMATIC DIAGRAM

(MAIN PCB)

V651 (7-MT-201G) GRID ASSIGNMENT

ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	S	h	h	h	h	h	M
P2	L	k	—	—	—	—	P
P3	M	col2	—	col1	—	—	A
P4	⌟	f	f	f	f	f	ATR
P5	b	b	b	b	b	b	VCR
P6	OTR	a	a	a	a	a	▭
P7	g	g	g	g	g	g	—
P8	—	e	e	e	e	e	—
P9	P	j	j	j	j	j	—
P10	c	c	c	c	c	c	—
P11	—	d	d	d	d	d	—

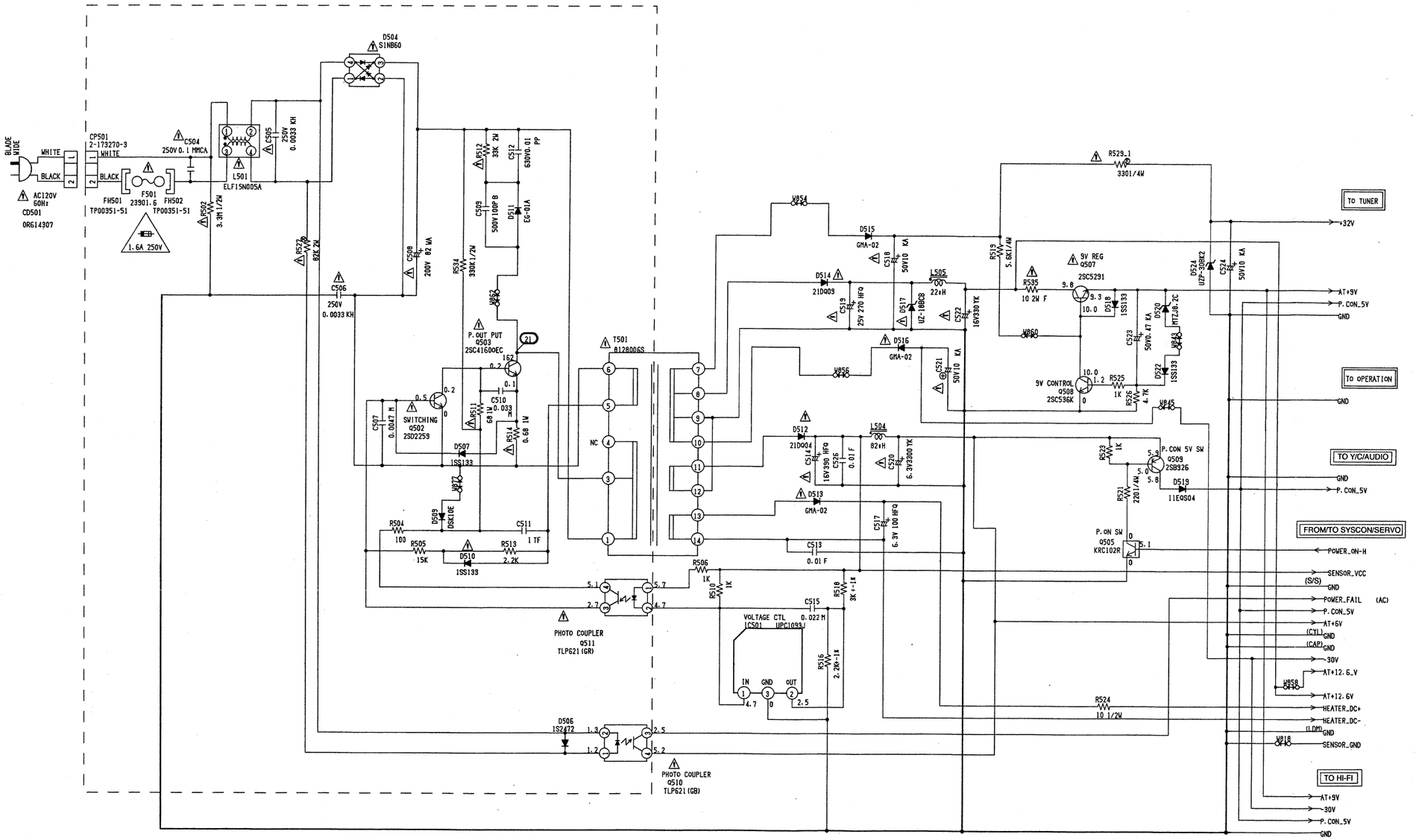


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

POWER SCHEMATIC DIAGRAM

(MAIN PCB)



1.6A 250V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD. REPLACE ONLY WITH THE SAME TYPE FUSE 1.6A 250V (F501).

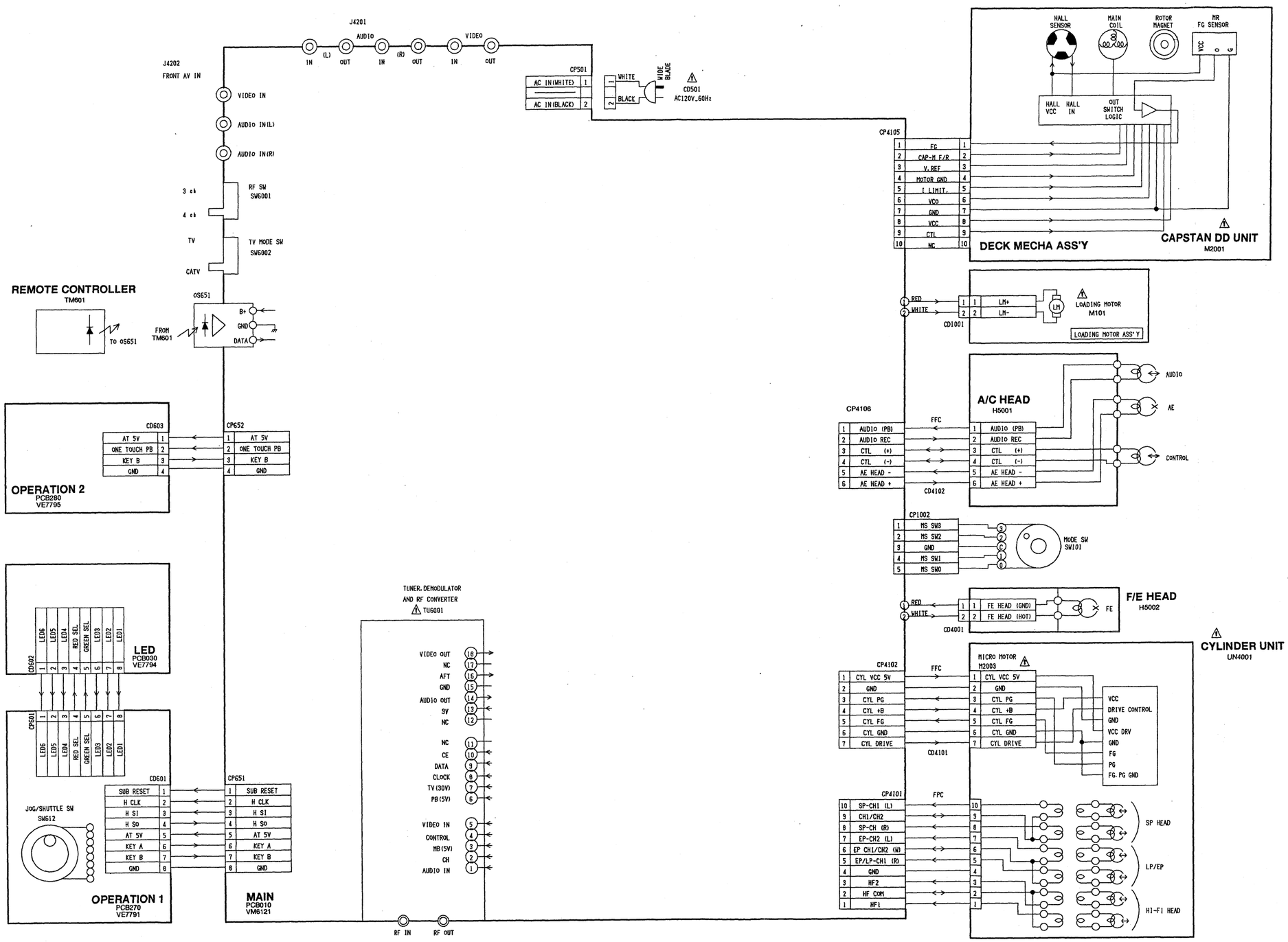
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

INTERCONNECTION DIAGRAM

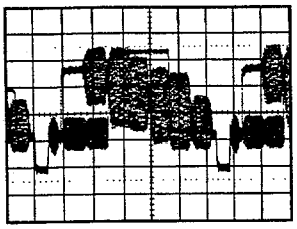


CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

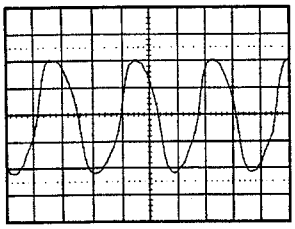
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

WAVEFORMS

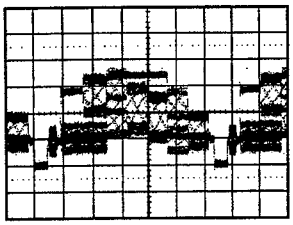
Y/C/AUDIO



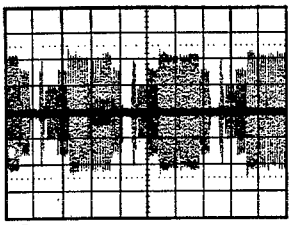
① 0.5V 10μs/div



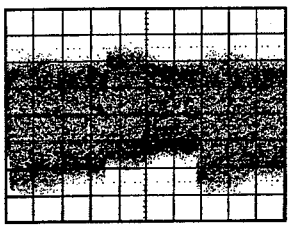
② 100mV 1μs/div



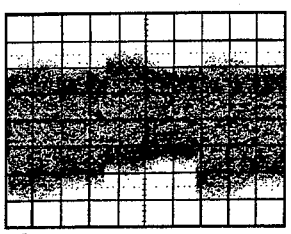
③ 100mV 10μs/div



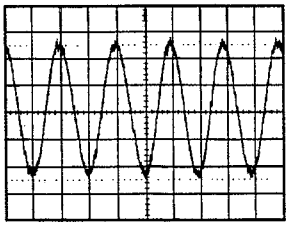
④ 100mV 20μs/div



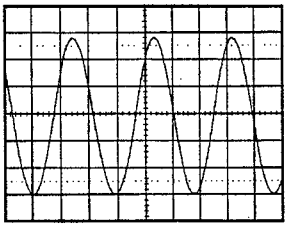
④ 100mV 5 ms/div



⑤ 50mV 20μs/div

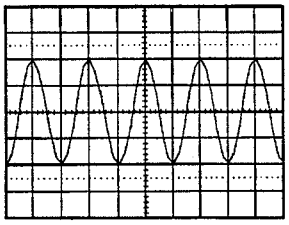


⑥ 20mV 0.5ms/div

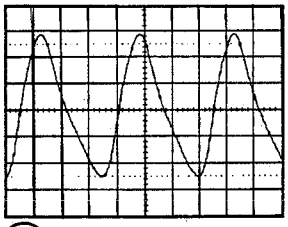


⑦ 10V 5μs/div

SYSCON/SERVO



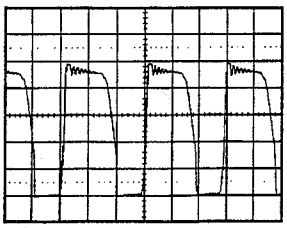
⑪ 1V 50ns/div



⑫ 0.5V 20ns/div

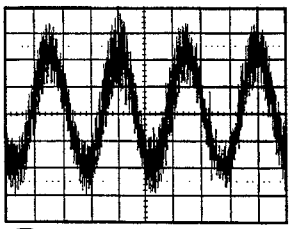
POWER

㉑ 50V 2μs/div

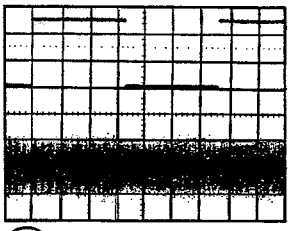


㉑ 50V 2μs/div

HI-FI

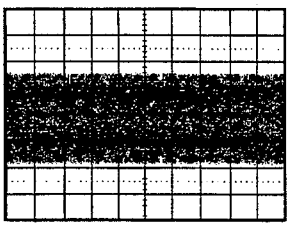


⑤1 100mV 1ms/div



⑤2 0.5V 5ms/div

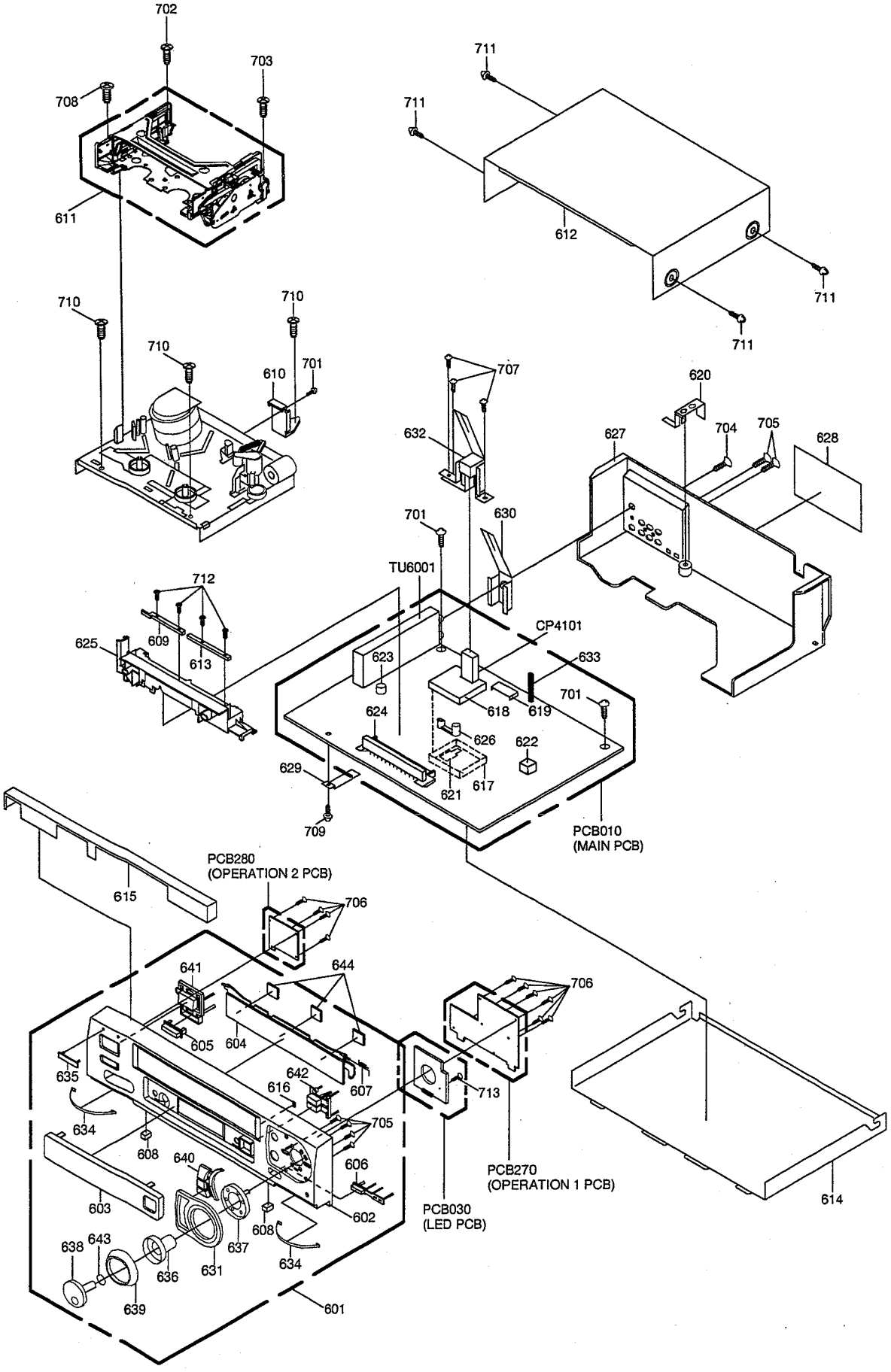
⑤3 2V 5ms/div



⑤4 100mV 5ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



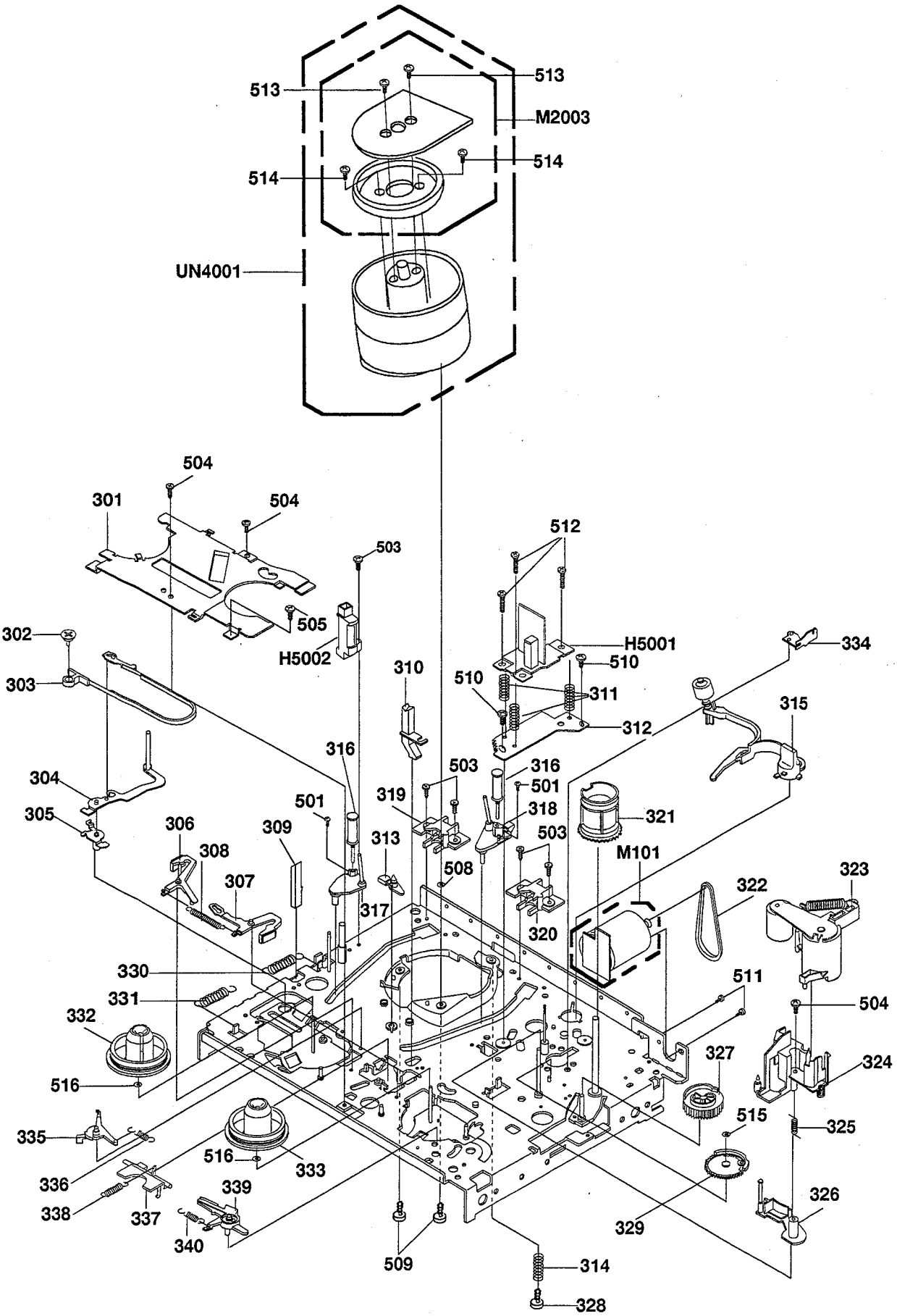
MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
601	S4-C01-0B7-200	CABINET,FRONT ASS'Y	1
602	-----	CAB,FRONT	1
603	S1-1WP-D04-780	PLATE,DISPLAY	1
604	S1-2WP-J05-160	FLAP	1
605	S3-5WP-A03-020	BUTTON,PLAY BACK	1
606	S3-5WP-J00-380	BUTTON,REC	1
607	S4-3WK-AA0-010	SPRING,FLAP	1
608	-----	CUSHION,LEG	2
609	S6-1WP-A01-300	HOLD,CASS(L)	1
610	-----	ANGLE,DECK BACK	1
611	S5-OA9-001-980	FRONT LOADING UNIT 7	1
612	S0-2WS-BA0-010	CABINET,TOP	1
613	S6-1WP-A01-310	HOLD,CASS(R)	1
614	-----	PLATE,BOTTOM	1
615	-----	ANGLE,DECK	1
616	-----	CUSHION,FLAP-A 3.3*7*T3	1
617	-----	SHIELD,HEAD AMP	1
618	-----	COVER,HEAD AMP	1
619	-----	PLATE,EARTH SYSCON	1
620	-----	PLATE,EARTH BOTTOM	1
621	-----	SPR,EARTH HEAD AMP	1
622	S5-4WP-A00-150	COVER,LED(R)	1
623	S5-4WP-A00-140	COVER,LED(L)	1
624	-----	HOLDER,CLOCK	1
625	-----	HOLDER,DECK	1
626	S5-OP7-000-310	HOLDER,LED	1
627	S0-2WP-A04-250	PANEL,BACK	1
628	-----	LABEL,RATING	1
629	-----	SPR,EARTH 3PIN	1
630	-----	SPR,EARTH TOP	1
631	S3-5WP-J00-400	BUTTON,BASE	1
632	-----	SHIELD CASE ASS'Y	1
633	-----	COATING CLIP	1
634	-----	SHEET,LEG	2
635	S2-344-900-130	BADGE,BRAND	1
636	-----	GLASS,RING	1
637	S3-5WP-A03-040	COVER,LED	1
638	S3-5WP-J00-410	JOG	1
639	S3-5WP-J00-420	SHUTTLE	1
640	S3-5WP-J00-430	BUTTON,DECK	1
641	S3-5WP-J00-440	BUTTON,POWER	1
642	S3-5WP-J00-450	BUTTON,CHANNEL	1
643	S4-3WU-A00-020	SPRING,JOG	1
644	-----	CUSHION	3
701	87-744-094-410	UT2+3+6	3
702	87-743-073-410	VT2+2.6-6	1
703	87-751-074-410	BVT,2.6-8	1
704	S1-074-306-020	SCREW,TAP 3-6	1
705	87-751-096-410	VT2+3-10	2
706	87-743-074-410	VT2+2.6-8	14
707	87-B10-033-010	SCREW,TAP 3*4	3
708	87-581-096-410	UIT+3-10	1
709	87-751-095-410	TAP(P)3-8	1
710	S1-171-40A-240	TAP(B0)V+4-12	3
711	S1-175-40A-020	SCREW,TRUSS 4-10	4
712	87-352-075-210	BVT+2.6-10	4
713	87-067-676-010	SCREW,TAP TITE(P) BIND 2.6*6	1

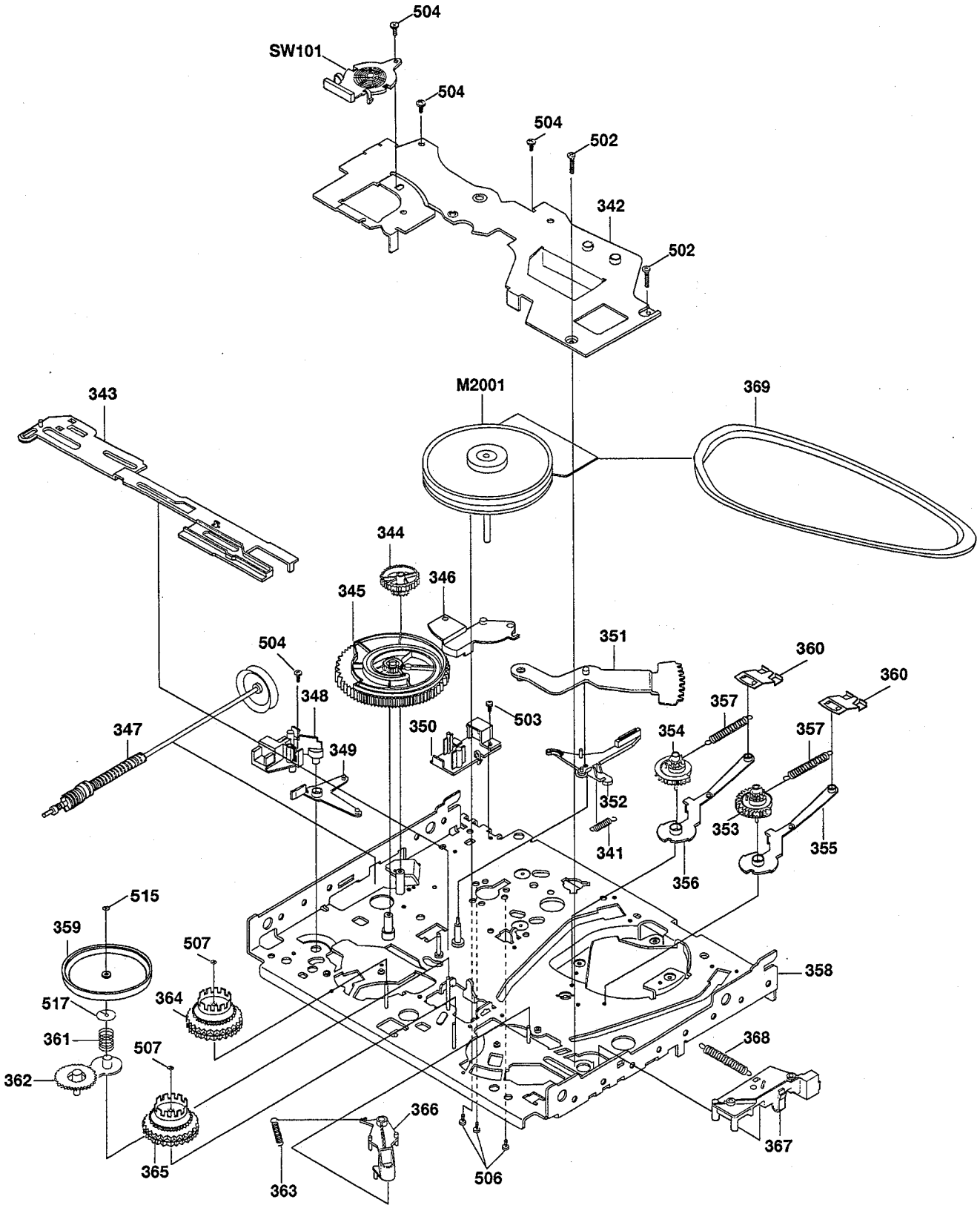
ACCESSORY REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	S6-CPL-050-190	CABLE,NTSC-1500M	1
2	S6-CNB-A50-040	COED,RCA PIN 06CNBA5004	1
3	S7-660-BJ0-100	RC,RC-FX5000 SBEQ20018A	1
4	S4-C01-001-000	INSTRUC BOOK(HVFX5000)	1

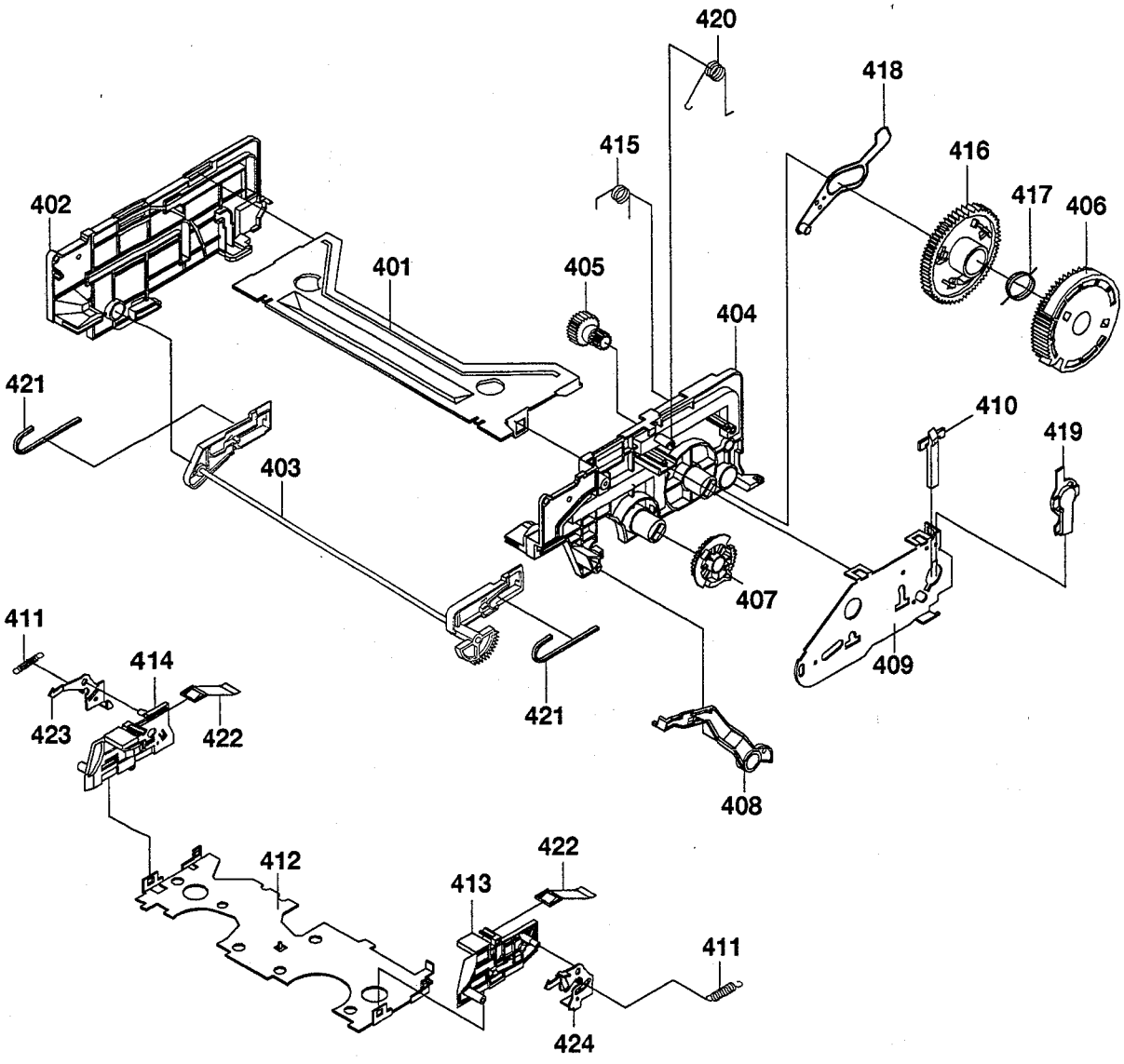
CHASSIS EXPLODED VIEW (TOP VIEW)



CHASSIS EXPLODED VIEW (BOTTOM VIEW)



FRONT LOADING UNIT 7 EXPLODED VIEW



CHASSIS/FRONT LOADING UNIT 7 REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
301	S5-OP6-004-710	BRACKET,BRAKE	1
302	S5-OP4-003-580	ADJUST,TENSION	1
303	S5-OA4-001-220	TENSION BAND ASS'Y	1
304	S5-OA4-001-240	TENSION ARM ASS'Y	1
305	S5-OA4-001-230	TENSION LEVER 2 ASS'Y	1
306	S5-OA6-001-550	MAIN BRAKE S ASS'Y	1
307	S5-OA6-001-560	MAIN BRAKE T ASS'Y	1
308	S5-OP8-002-520	SPR,MAIN BRAKE	1
309	S5-OP9-005-640	REFLECTOR,EOT	1
310	S5-OP4-004-110	REFLECTOR,LED 2	1
311	S5-OP8-002-690	SPR,AC HEAD	3
312	S5-OP5-000-600	BASE,AC HEAD	1
313	S5-OP0-003-940	POST,CASS GUIDE L	1
314	S5-OP8-002-450	SPRING,AZIMUTH 2	1
315	S5-OA5-000-130	AHC ASS'Y	1
316	S5-OA4-001-020	G-ROLLER ASS'Y	2
317	S5-OA4-001-140	BASE,S INCLINED ASSY	1
318	S5-OA4-001-150	BASE,T INCLINED ASSY	1
319	S5-OP4-003-300	CATCHER S	1
320	S5-OP4-003-320	CATCHER T	1
321	S5-OP4-003-430	CAM,PINCH ROLLER	1
322	S5-OP6-004-870	BELT,LOADING	1
323	S5-OA4-001-170	PINCH ROLLER BLOCK	1
324	S5-OP9-005-410	CASS,OPENER	1
325	S5-OP8-002-640	SPR,P5	1
326	S5-OA4-001-200	P5 ARM ASS'Y	1
327	S5-OP4-003-420	CAM,GEAR	1
328	S1-462-30A-140	VT2+3-11	1
329	S5-OP4-003-440	CAM,P5	1
330	S5-OP4-003-560	SPR,TENSION ARM 2	1
331	S5-OP4-003-570	SPR,TENSION ARM 1	1
332	S5-OP2-002-160	REEL S	1
333	S5-OP2-002-170	REEL T	1
334	S5-OP4-004-020	CATCHER,P5 2	1
335	S5-OP6-004-650	SUB BRAKE S	1
336	S5-OP8-002-530	SPR,S-S BRAKE	1
337	S5-OP2-002-470	ARM,JOINT	1
338	S5-OP8-002-620	SPR,JOINT ARM	1
339	S5-OA6-001-570	SUB BRAKE T ASS'Y	1
340	S5-OP8-002-540	SPR,T-S BRAKE	1
341	S5-OP8-002-550	SPR,CAP BRAKE	1
342	-----	PLATE,BOTTOM	1
343	S5-OA6-001-760	ROD,MAIN ASS'Y	1
344	S5-OP4-003-410	GEAR,MIDDLE	1
345	S5-OP6-004-720	CAM,MAIN	1
346	S5-OP6-004-680	LEVER,MAIN BRAKE	1
347	S5-OA6-001-590	WORM ASS'Y	1
348	S5-OP6-004-830	BRACKET,WORM F	1
349	S5-OP6-004-740	LEVER,RATCHET	1
350	S5-OP6-004-840	BRACKET,WORM R	1
351	S5-OP3-001-510	LEVER,LOADING	1
352	S5-OA6-001-580	CAP BRAKE ASS'Y (S)	1
353	S5-OP3-001-520	GEAR,LOADING S	1
354	S5-OP3-001-530	GEAR,LOADING T	1
355	S5-OA3-000-530	LOADING ARM S ASS'Y	1
356	S5-OA3-000-540	LOADING ARM T ASS'Y	1
357	S5-OP8-002-630	SPR,LOADING GEAR	2
358	S5-OA0-002-310	MAIN CHASS ASS'Y	1
359	S5-OP2-002-130	CENTER,PULLEY	1
360	S5-OP3-001-500	SLIDER,LOADING	2
361	S5-OP8-002-610	SPR,C-PULLEY	1
362	S5-OA2-000-650	ARM,IDLER,ASS'Y	1
363	S5-OP8-002-700	SPR,LEVER TENSION	1
364	S5-OA2-000-640	CLUTCH GEAR T ASS'Y	1
365	S5-OA2-000-630	CLUTCH GEAR S ASS'Y	1
366	S5-OP4-003-600	LEVER,TENSION	1
367	S5-OP4-003-590	HOLDER,TENSION	1
368	S5-OP8-002-560	SPR,MAIN ROD	1
369	S5-OP2-002-150	BELT,CAPSTAN	1

REF. NO.	PART NO.	DESCRIPTION	Q'TY
401	S5-OP9-006-170	BRKET,TOP	1
402	S5-OP9-006-670	BRACKET,SIDE L	1
403	S5-OA9-001-650	LINK ASSY	1
404	S5-OP9-006-150	BRKET,SIDE R	1
405	S5-OP9-006-010	GEAR,JOINT	1
406	S5-OP9-006-020	GEAR,CAM	1
407	S5-OP9-006-090	GEAR,LINK R	1
408	S5-OP9-006-720	LEVER,FLAP 2	1
409	S5-OP9-006-160	BRKET,SIDE R2	1
410	-----	REFLECTOR,BOT	1
411	S5-OP8-002-960	SPR,LOCKER	2
412	S5-OP9-006-110	CASS,HOLDER	1
413	S5-OP9-006-130	CASS,SIDE R	1
414	S5-OP9-006-680	CASS,SIDE L	1
415	S5-OP8-002-980	SPR,BRACKET R	1
416	S5-OP9-006-080	GEAR,CLUTCH	1
417	S5-OP8-002-970	SPR,CLUTCH	1
418	S5-OP9-006-100	LEVER,BOT	1
419	S5-OP9-006-200	COVER,SENSOR BOT	1
420	S5-OP8-002-900	SPR,EARTH	1
421	S5-OP8-002-940	SPR,LINK	2
422	S5-OP8-002-990	SPR,PACK	2
423	S5-OP9-006-050	LOCKER,L	1
424	S5-OP9-006-060	LOCKER,R	1
501	87-357-529-310	SCREW TAP(P)BIND 1.7-4.0	2
502	87-352-079-210	VT2+2.6-16	2
503	87-743-074-410	VT2+2.6-8	6
504	87-743-073-410	VT2+2.6-6	7
505	S1-071-236-040	SCREW,TAP 2.3-6 PAN	1
506	87-264-074-410	SCREW,TAP(B)PAN 2.6-8	3
507	S2-P16-600-5N0	POLY,W(CUT)1.6-6-0.5	2
508	S2-Q31-54B-3N0	PW,3.1-5.4-T0.13	1
509	S1-0A1-306-040	SCREW,WASHER(A)M3-6	2
510	S1-0B1-266-040	UFT2+M2.6-6	2
511	87-258-091-010	U+M3-3	2
512	87-253-075-010	U+M2.6-10	3
513	S1-0A1-235-040	SEMS A M2.3-5	2
514	87-261-093-410	SCREW,M3-5	2
515	87-067-909-010	POLY,W(CUT)2.6-6-0.5	2
516	S2-Q26-471-3N0	POLY,W 2.6-4.7-0.13	2
517	S2-P26-A00-5N0	POLY,W(CUT)2.6-10-0.5	1
H5001	S5-23D-910-290	HEAD,AC HVMZA12	1
H5002	S5-43D-020-100	HEAD,FULL ERASE HVFHF00	1
⚠ M101	S5-OA6-001-770	LOAD MTR.ASS'Y	1
⚠ M2001	S5-103-980-290	CAPSTAN UNIT F2QTB32	1
⚠ M2003	S5-89S-110-120	MICRO MOTOR F2OEL59	1
SW101	S5-202-440-030	SW,ROTARY SRZZ0B068B	1
⚠ UN4001	S4-C00-4A5-000	CYLINDER UNIT ASS'Y A4C004A500	1

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
	MAIN PCB ASS'Y	
	*** RESISTORS ***	
⚠ R502	S0-310-233-5J0	RC 3.3M-1/2W
⚠ R511	87-025-576-060	RES,M/O 68-1W
⚠ R512	S3-X28-A33-3J0	RES,M/O 33K-2W
⚠ R514	S3-X18-1R6-8J0	RES,M/O 0.68-1W
⚠ R527	S3-X28-A82-3J0	RES,M/O 82K-2W
⚠ R529	S6-158-433-1J0	RES,FUSE 330-1/4W
⚠ R535	87-029-151-090	RES,FUSE 10-2W
⚠ R1015	S6-150-12R-7J0	RES,FUSE 2.7-1W
R1063	87-025-431-080	RES,METAL 5.6K-1/6W
R4020	87-025-367-080	RES,M/F 1K-1/6W
	*** CAPACITORS ***	
⚠ C504	S2-222-B10-4K0	CAP,CMP 0.1-250V
⚠ C505	SB-3LE-0ML-3M0	CAP,CER 0.0033-250V
⚠ C506	SB-3LE-0ML-3M0	CAP,CER 0.0033-250V
⚠ C508	S0-2AF-C82-0M0	CAP,E 82-200V
C509	88-238-410-810	CAP,CER 100PF-500V B
C512	S3-N1F-510-3J0	CAP,CPP 0.01-630V
⚠ C514	S0-1QT-239-1M0	CAP,E 390-16V
C517	87-015-677-080	CAP,E 100-6.3V
⚠ C518	87-010-560-080	CAP,E 10-50V
⚠ C519	S0-1QT-327-1M0	CAP,E 270-25V
⚠ C520	87-010-373-010	CAP,E 3300-6.3V
⚠ C521	87-010-560-080	CAP,E 10-50V
⚠ C522	87-010-685-010	CAP,E 330-16V
C523	87-010-400-080	CAP,E 0.47-50V
C524	87-010-560-080	CAP,E 10-50V
C656	87-010-550-080	CAP,E 1000-6.3V
C659	87-015-677-010	CAP,E 100-6.3V
C1003	87-010-112-080	CAP,E 100-16V
C1008	87-010-380-080	CAP,E 47-16V
C1019	87-015-695-080	CAP,E 1-50V
C1021	87-010-265-080	CAP,E 33-16V
C1023	87-010-370-080	CAP,E 330-6.3V
C1029	87-010-401-080	CAP,E 1-50V
C1033	87-010-374-080	CAP,E 47-10V
C1041	87-010-549-010	CAP,E 47-6.3V
C1045	87-010-404-080	CAP,E 4.7-50V
C1046	87-010-379-080	CAP,E 22-16V
C1047	87-010-380-080	CAP,E 47-16V
C1062	87-010-370-080	CAP,E 330-6.3V
C1069	87-010-549-010	CAP,E 47-6.3V
C1071	SH-GTS-L4Q-1J0	CAP,CER 47PF-50V
C4001	87-010-404-080	CAP,E 4.7-50V
C4002	S3-N1T-122-3J0	CAP,CPP 0.022-100V
C4007	87-016-053-080	CAP,E 22-16V
C4009	87-016-053-080	CAP,E 22-16V
C4013	87-010-374-080	CAP,E 47-10V
C4017	87-010-371-080	CAP,E 470-6.3V
C4020	87-010-498-080	CAP,E 10-16V
C4021	87-010-404-080	CAP,E 4.7-50V
C4023	87-010-402-080	CAP,E 2.2-50V
C4024	87-010-404-080	CAP,E 4.7-50V
C4027	87-010-400-080	CAP,E 0.47-50V
C4028	87-010-498-080	CAP,E 10-16V
C4029	87-010-560-080	CAP,E 10-50V
C4030	87-016-053-080	CAP,E 22-16V
C4033	87-010-498-080	CAP,E 10-16V
C4041	87-016-334-080	CAP,E 4.7-25V
C4058	87-015-677-010	CAP,E 100-6.3V
C4078	87-010-380-080	CAP,E 47-16V
C4102	87-010-401-080	CAP,E 1-50V

REF. NO.	PART NO.	DESCRIPTION
	*** CAPACITORS ***	
C4123	87-010-380-080	CAP,E 47-16V
C4131	87-010-380-080	CAP,E 47-16V
C4201	87-010-221-080	CAP,E 470-10V
C4203	87-015-975-080	CAP,E 220-6.3V
C4204	87-010-380-080	CAP,E 47-16V
C4214	87-010-549-010	CAP,E 47-6.3V
C4218	87-010-553-040	CAP,E 47-16V
C4219	87-010-071-010	CAP,E 1-50V
C4220	SH-G0B-04Q-2K0	CAP,CER 470PF-50V B
C4221	SH-G0B-04Q-2K0	CAP,CER 470PF-50V B
C5501	87-010-112-080	CAP,E 100-16V
C5503	87-010-112-080	CAP,E 100-16V
C5504	87-016-334-080	CAP,E 4.7-25V
C5508	87-010-380-080	CAP,E 47-16V
C5510	87-010-380-080	CAP,E 47-16V
C5511	87-015-075-040	CAP,E 10-16V
C5512	87-010-498-080	CAP,E 10-16V
C5517	87-010-380-080	CAP,E 47-16V
C5518	87-015-677-080	CAP,E 100-6.3V
C5520	87-015-677-080	CAP,E 100-6.3V
C6002	87-015-677-010	CAP,E 100-6.3V
C6004	87-010-221-080	CAP,E 470-10V
C6007	87-010-221-080	CAP,E 470-10V
C6011	87-010-548-010	CAP,E 220-16V
C6601	87-016-156-080	CAP,TAN 10-16V
C6602	87-016-301-080	CAP,TAN 3.3-16V
C6603	87-010-378-080	CAP,E 10-16V
C6604	87-010-378-080	CAP,E 10-16V
C6605	87-010-401-080	CAP,E 1-50V
C6606	87-010-498-080	CAP,E 10-16V
C6611	87-010-112-080	CAP,E 100-16V
C6612	87-016-053-080	CAP,E 22-16V
C6614	87-010-400-080	CAP,E 0.47-50V
C6618	87-015-695-080	CAP,E 1-50V
C6619	87-015-696-080	CAP,E 2.2-50V
C6620	87-015-683-080	CAP,E 33-16V
C6621	87-010-498-080	CAP,E 10-16V
C6627	87-010-404-080	CAP,E 4.7-50V
	*** DIODES ***	
⚠ D504	S4-10S-1NB-600	DIODE,S1NB60
D506	S1-VT0-247-200	DIODE,1S2472T
D507	87-020-465-010	DIODE,1SS133T
D509	S2-3TD-SK1-0E0	DIODE,DSK10E-BT
⚠ D510	87-020-465-010	DIODE,1SS133T
D511	S2-BT0-EG0-1A0	DIODE,EG-01A
⚠ D512	S2-8T1-DQ0-400	DIODE,21DQ04-TA2B1
⚠ D513	S1-3TG-MA0-200	DIODE,GMA-02-BT
⚠ D514	S2-8T1-DQ0-900	DIODE,21DQ09-TA2B1
D515	S1-3TG-MA0-200	DIODE,GMA-02-BT
⚠ D516	S1-3TG-MA0-200	DIODE,GMA-02-BT
⚠ D517	S9-JT0-180-1B0	ZENER,UZ-18BCB-TA
D518	87-020-465-010	DIODE,1SS133T
D519	S2-8XE-QS0-400	DIODE,11EQS04TA2B5
D520	S9-7U0-8R2-1C0	ZENER,MTZJ8.2C T-77
D522	87-020-465-010	DIODE,1SS133T
D524	S9-J01-300-B20	ZENER,UZP-30BK2
D1001	S2-8T0-11E-100	DIODE,11E1TA1B2
D1002	87-020-465-010	DIODE,1SS133T
D1003	87-020-682-010	PHOTO DIODE,SLR-938C
D1004	S2-8T0-11E-100	DIODE,11E1TA1B2
D1005	87-020-465-010	DIODE,1SS133T
D1012	87-070-136-080	ZENER,MTZJ5.1C T-77
D4001	87-020-465-010	DIODE,1SS133T

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
	*** DIODES ***	
D4005	87-020-465-010	DIODE,1SS133T
D4006	87-020-465-010	DIODE,1SS133T
D4009	S9-7U0-6R8-1C0	ZENER,MTZJ6.8C T-77
D4102	87-020-465-010	DIODE,1SS133T
D4201	S9-7U0-6R8-1C0	ZENER,MTZJ6.8C T-77
D4202	SM-TZ7-R5B-T00	ZENER,MTZJ7.5B T-77
D5501	87-020-465-010	DIODE,1SS133T
	*** ICS ***	
IC501	87-070-203-040	IC,UPC1093J-T
IC651	S0-XF5-163-130	IC,UPD16313
⚠ IC1001	S0-7S0-902-9A0	IC,OEC9029A
IC1002	S9-UJ0-T60-0H0	IC,PST600H
IC1003	S0-3F0-635-8N0	IC,LA6358NML-TP-T
IC1005	SC-3D0-C02-F00	IC,ST24C02FB6
IC1006	S5-4F5-006-2A0	IC,OEC0062A
IC4001	S0-3F3-710-030	IC,LA71003M-MPB
IC4002	S5-3D3-996-200	IC,LC89962
IC4101	S0-3F0-700-200	IC,LA70020M
IC4201	S0-3S0-701-600	IC,LA7016
IC5501	S0-7J7-01A-K00	IC,BH7801AK-E2
IC6601	SD-XF1-876-G00	IC,UPC1876GT
	*** TRANSISTORS ***	
⚠ Q502	SD-1T0-225-900	TR,2SD2259
⚠ Q503	SC-300-416-000	TR,2SC4160
Q505	SN-AAB-050-030	TR,KRC102RTK
⚠ Q507	SC-3T0-529-100	TR,2SC5291(S,T)
Q508	89-305-366-010	TR,2SC536K(F,G)
Q509	SB-WT0-092-600	TR,2SB926(S,T)
⚠ Q510	S0-025-004-600	PHOTO COUPLER,TLP621(GB)
⚠ Q511	S0-025-004-500	PHOTO COUPLER,TLP621(GR)
Q1001	S0-02G-004-900	PHOTO COUPLER,GP1S94
Q1002	S0-007-003-200	PHOTO TR,RPT-38PB113
Q1003	SC-YT2-872-S00	TR,2SC2872S
Q1004	S0-007-003-200	PHOTO TR,RPT-38PB113
Q1005	S0-02G-004-900	PHOTO COUPLER,GP1S94
Q1009	SN-AAC-050-020	TR,KRC103RTK
Q1010	SP-3TA-060-010	TR,2SA1527-AA
Q1013	SP-3TA-060-010	TR,2SA1527-AA
Q1016	89-324-122-080	TR,2SC2412
Q1017	89-324-122-080	TR,2SC2412
Q1018	89-110-372-010	TR,2SA1037
Q4001	89-322-746-080	TR,2SC2274
Q4002	89-322-746-080	TR,2SC2274
Q4003	89-324-122-080	TR,2SC2412
Q4004	SA-3T0-984-K00	TR,2SA984K(E,F)
Q4005	89-324-122-080	TR,2SC2412
Q4006	SD-3T0-073-400	TR,2SD734(E,F)-AA
Q4007	87-026-447-080	TR,2SC1740SP(R,S)
Q4008	87-026-411-080	TR,DTC144EKAT146
Q4009	89-324-122-080	TR,2SC2412
Q4011	89-110-372-010	TR,2SA1037
Q4013	89-110-372-010	TR,2SA1037
Q4018	87-026-217-080	TR,DTC124E
Q4201	89-324-122-080	TR,2SC2412
Q4202	89-110-372-010	TR,2SA1037
Q4203	89-110-372-010	TR,2SA1037
Q4204	89-324-122-080	TR,2SC2412
Q4206	89-324-122-080	TR,2SC2412
Q5502	SB-100-064-400	TR,2SB644
Q6001	89-110-372-010	TR,2SA1037
Q6601	89-324-122-080	TR,2SC2412

REF. NO.	PART NO.	DESCRIPTION
	*** COILS ***	
⚠ L501	S2-911-5N0-050	COIL,LINE FILTER ELF15N005A
L504	S2-1L7-582-0K0	COIL,82UH
L505	S2-1L7-522-0K0	COIL,22UH
L1001	87-003-152-010	COIL,100UH
L1002	87-003-146-070	COIL,15UH
L4002	S2-167-D10-1K0	COIL,100UH
L4004	S2-167-D10-1K0	COIL,100UH
L4005	87-003-285-080	COIL,39UH
L4006	87-003-152-010	COIL,100UH
L4011	87-003-150-080	COIL,68UH
L4013	S2-1QA-633-1K0	COIL,330UH
L4015	S2-1LA-627-1K0	COIL,270UH
L4016	87-003-152-010	COIL,100UH
L4101	S2-167-D10-1K0	COIL,100UH
L4103	S2-167-D10-1K0	COIL,100UH
L4201	87-003-152-010	COIL,100UH
L4202	87-003-152-010	COIL,100UH
L5501	87-003-152-010	COIL,100UH
L6001	S2-167-D10-1K0	COIL,100UH
L6002	87-003-152-010	COIL,100UH
L6601	S2-167-D10-1K0	COIL,100UH
⚠ T4001	S3-162-600-6R0	COIL,BIAS OSC 1626006
	*** TRANSFORMER ***	
⚠ T501	S4-812-800-6S0	TRANS,SWITCHING 8128006S
	*** JACKS ***	
J4201	S6-0X1-110-130	JACK,RCA 3.5 JPJ7506-0104230
J4202	S6-074-310-040	JACK,RCA LPR1251-0120
	*** SWITCHES ***	
SW1001	S5-503-220-040	SW,LEAF HXW0394-010010
SW6001	S5-10U-210-220	SW,SLIDE SSSF113342A
SW6002	S5-10U-210-220	SW,SLIDE SSSF113342A
	*** VARIABLE RESISTORS ***	
VR6601	S1-263-15B-T60	SFR,RH0638C15R0TA
VR6602	S1-263-15B-T60	SFR,RH0638C15R0TA
VR6603	S1-263-14B-T70	SFR,RH0683C14R04A
VR6604	S1-263-H4B-T70	SFR,RH0683CJ4R04A
VR6605	S1-263-H4B-T60	SFR,RH0638CJ4R02A
	*** CONNECTOR ***	
CP501	S6-944-301-000	CORD,CONN 2-173270-3
	*** CRYSTALS ***	
X1001	S0-0CA-010-020	X'TAL,HC-49/U-S 10MHZ
X4001	S0-0WA-3R5-060	X'TAL,3.579545MHZ
	*** TUNER ***	
⚠ TU6001	S1-626-000-100	RF UNIT,TMLH2-007A
	*** FUSES ***	
⚠ F501	S8-02C-1R6-050	FUSE 23901.6
FH501	S6-710-T00-060	HOLDER,FUSE TP00351-51
FH502	S6-710-T00-060	HOLDER,FUSE TP00351-51

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
	*** NETWORK ***	
NR1001	S1-024-472-T10	R,NETWORK RGLD4X472J-T21
	*** OTHERS ***	
CD1001	S6-CH2-204-4A0	CORD,EIS CONN CH22044A
OS651	87-A90-565-010	REMOTE RECEIVER GP1U291Q
V651	S9-677-9R0-010	FL DISPLAY 7-MT-201G
	LED PCB ASS'Y	
	*** DIODES ***	
D601	S0-221-9Q0-300	LED,LN11WP23-(TDA)
D602	S0-221-9Q0-300	LED,LN11WP23-(TDA)
D603	S0-221-9Q0-300	LED,LN11WP23-(TDA)
D604	S0-221-9Q0-300	LED,LN11WP23-(TDA)
D605	S0-221-9Q0-300	LED,LN11WP23-(TDA)
D606	S0-221-9Q0-300	LED,LN11WP23-(TDA)
	*** OTHER ***	
CD602	S6-CH2-810-3A0	CORD,EIS CONN CH28103A
	OPERATION 1 PCB ASS'Y	
	*** IC ***	
IC601	S5-4D5-006-1A0	IC,OEC0061A
	*** TRANSISTORS ***	
Q601	SP-3TN-06A-010	TR,2SA1529-AA
Q602	SP-3TN-06A-010	TR,2SA1529-AA
	*** SWITCHES ***	
SW601	S5-042-01T-310	SW,TACT SKHVBE075B
SW602	S5-042-01T-310	SW,TACT SKHVBE075B
SW603	S5-042-01T-310	SW,TACT SKHVBE075B
SW605	S5-042-01T-310	SW,TACT SKHVBE075B
SW607	S5-042-01T-310	SW,TACT SKHVBE075B
SW608	S5-042-01T-310	SW,TACT SKHVBE075B
SW609	S5-042-01T-310	SW,TACT SKHVBE075B
SW612	S5-54U-000-010	SW,(JOG SHUTTLE)SRGPHJ126A
	*** CERAMIC OSCILLATOR ***	
X601	S0-02T-4R0-050	CER OSC,CST4.00MGW-TF01
	*** OTHER ***	
CD601	S6-CH2-810-3A0	CORD,EIS CONN CH28103A
	OPERATION 2 PCB ASS'Y	
	*** DIODES ***	
D607	SL-DKL-G12-4BA	LED,KLG114L-FAJ
D608	SL-DKL-G12-4BA	LED,KLG114L-FAJ
	*** TRANSISTOR ***	
Q603	SP-7TB-050-010	TR,DTA114E
	*** SWITCHES ***	
SW610	S5-042-01T-310	SW,TACT SKHVBE075B
SW611	S5-042-01T-310	SW,TACT SKHVBE075B

REF. NO.	PART NO.	DESCRIPTION
	*** OTHER ***	
CD603	S6-CE2-404-9A0	CORD,CONN CE24049A
	AND OTHERS	
⚠ CD501	S2-0R6-143-070	CORD,AC 0R614307

aiwa

aiwa SERVICE

HV-FX6
HV-FX770
HV-FX777
HV-FX999
HV-FX2800
HV-FX5000
VX-T1430
VX-T2040
VX-T1480

SERVICE MANUAL

• BASIC VIDEO MECHANISM: OVD-5

• TYPE: NH,NHJK1AE,U,KER,K

SUPPLEMENT

This Service Manual contains information about the difference for the following models. If requiring the other information, see the each original Service Manual.

MODEL NAME	TYPE	S/M CODE NO.	
HV-FX6	NH	09-95A-106-30O	V15093
HV-FX770	NH	09-96C-166-00O	V17945
HV-FX777	NH	09-97A-204-80O	V19631
HV-FX777	NHJK1	09-985-269-50O	V21771
HV-FX999	NH	09-97A-204-70O	V19585
HV-FX999	NHJK1	09-985-269-60O	V21770
HV-FX2800	AE	09-97C-229-80O	V20727
HV-FX5000	U	09-978-220-70O	V18896 ✓
VX-T1430	KER	09-96B-165-80O	V17201
VX-T2040	KER	09-96C-165-90O	V17891
VX-T1480	K	09-976-197-20O	V18841

INFORMATION FOR USING THE DECK PARTS (OVD-5)

Parts on the deck of our product are very similar as shown below. Make sure to use the parts listed by Parts No. in the service manual for the repair. Because deck or your important tape will be damaged.

S/M Code No. 09-986-269-20O

TABLE OF CONTENTS

SPRING, MAIN BRAKE 2
SPRING, TENSION ARM 1 2
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MODE SWITCH 3
HOLDER, TENSION 3
CAM, MAIN 4
WORM ASS'Y 4
MAIN BRAKE T ASS'Y 5
LEVER, MAIN BRAKE 5
BRACKET, BRAKE 6
ARM IDLER ASS'Y 6
CLUTCH GEAR T ASS'Y 7
CLUTCH GEAR S ASS'Y 7
AHC ASS'Y 7
CAM PINCH ROLLER 8
P5 ARM ASS'Y 8
CATCHER P5 2 9
MAIN CHASSIS ASS'Y 9
ROD, MAIN ASS'Y 10
CAM, P5 11

The following parts can not be distinguished by the external appearance.

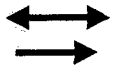
- SPRING, MAIN BRAKE and SPRING, MAIN BRAKE (VP)
- SPRING, TENSION ARM 1 and SPRING, TENSION ARM (1S)
- PINCH ROLLER BLOCK and PINCH ROLLER (PB) BLOCK

So before repairing, please identify each parts by referring to the Parts List and Parts No. of Service Manual.

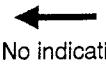
Notice for the Interchangeable Parts listed in this manual

Only the replaceable part in one unit is "Interchangeable".
Plural replaceable parts for interchangeable are "Non-Interchangeable".

Interchangeability indications between the left and the right figures:

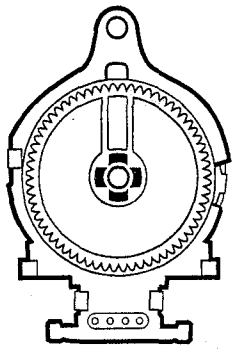

: Interchangeable

: Can be used the left figure part in place of the right figure part.

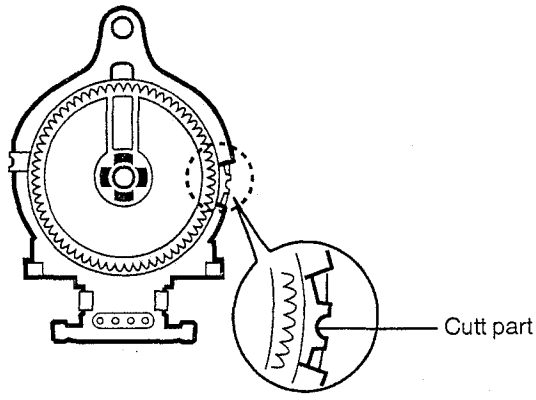

: Can be used the right figure part in place of the left figure part.

No indication : Non-Interchangeable

NAME: MODE SWITCH
PART NO.: S5-202-440-030

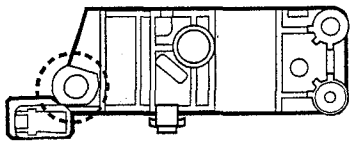


NAME: MODE SWITCH
PART NO.: S5-202-440-050

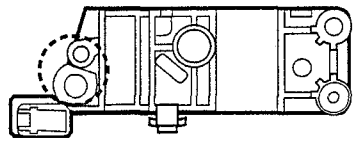


Distinction: You can distinguish by the cutt part.

NAME: HOLDER, TENSION
PART NO.: S5-OP4-003-590

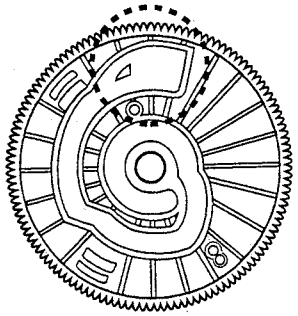


NAME: HOLDER, TENSION (S)
PART NO.: S5-OP4-004-520

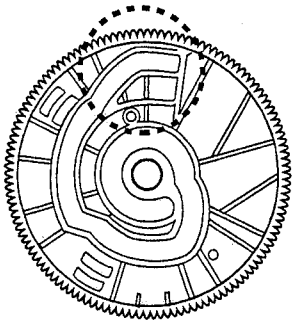


Distinction: You can distinguish by the shape in the dotted circle.

NAME: CAM, MAIN
PART NO.: S5-OP6-005-350

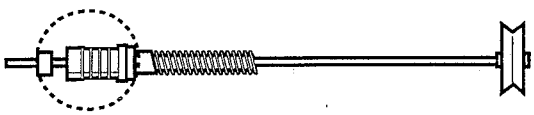


NAME: CAM, MAIN (VP)
PART NO.: S5-OP6-005-290

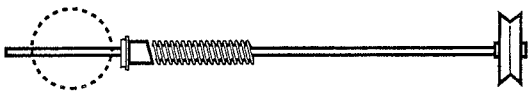


Distinction: You can distinguish by the shape in the dotted circle.

NAME: WORM ASS'Y
PART NO.: S5-OA6-001-590

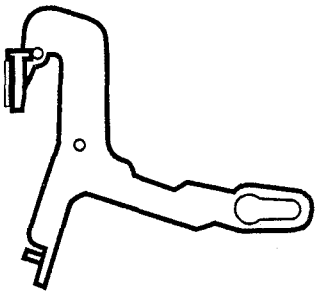


NAME: WORM (VP) ASS'Y
PART NO.: S5-OA6-001-790

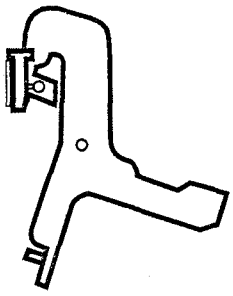


Distinction: You can distinguish by the shape in the dotted circle.

NAME: MAIN BRAKE T ASS'Y
PART NO.: S5-OA6-001-560

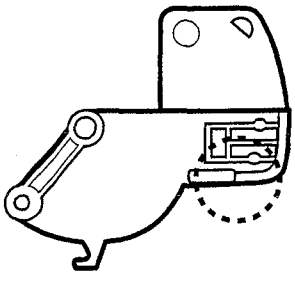


NAME: MAIN BRAKE T (VP) ASS'Y
PART NO.: S5-OA6-001-780

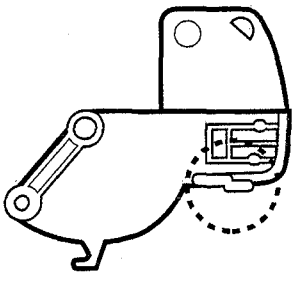


Distinction: You can distinguish by the shape.

NAME: LEVER, MAIN BRAKE
PART NO.: S5-OP6-004-680

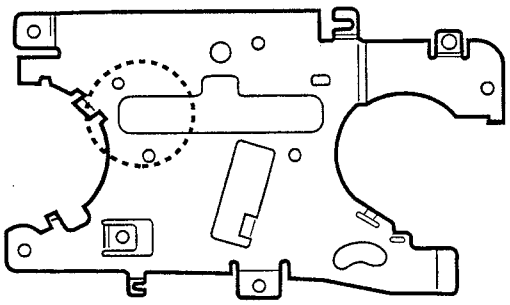


NAME: LEVER, MAIN BRAKE (VP)
PART NO.: S5-OP6-005-300

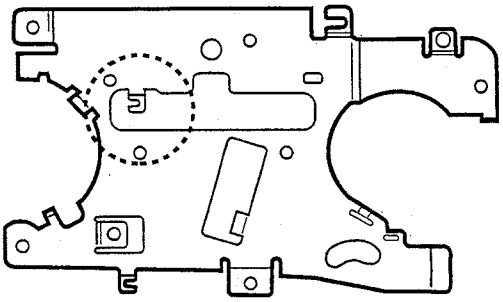


Distinction: You can distinguish by the shape in the dotted circle.

NAME: BRACKET, BRAKE
PART NO.: S5-OP6-004-710

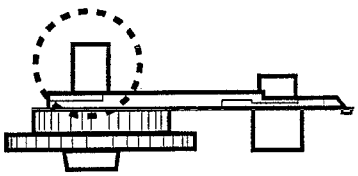


NAME: BRACKET, BRAKE (VP)
PART NO.: S5-OP6-005-310

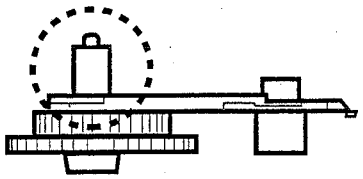


Distinction: You can distinguish by the shape in the dotted circle.

NAME: ARM IDLER ASS'Y
PART NO.: S5-OA2-000-650

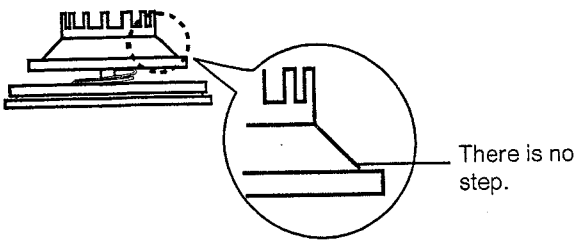


NAME: ARM IDLER (VP) ASS'Y
PART NO.: S5-OA2-000-670

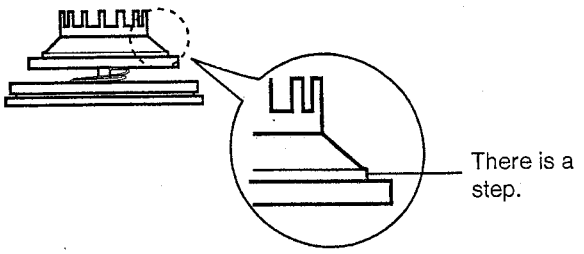


Distinction: You can distinguish by the shape in the dotted circle.

NAME: CLUTCH GEAR T ASS'Y
PART NO.: S5-OA2-000-640
NAME: CLUTCH GEAR S ASS'Y
PART NO.: S5-OA2-000-630
NAME: CLUTCH GEAR S (S) ASS'Y
PART NO.: S5-OA2-000-700



NAME: CLUTCH GEAR T (VP) ASS'Y
PART NO.: S5-OA2-000-690
NAME: CLUTCH GEAR S (VP) ASS'Y
PART NO.: S5-OA2-000-680
NAME: CLUTCH GEAR S (VPS) ASS'Y
PART NO.: S5-OA2-000-710



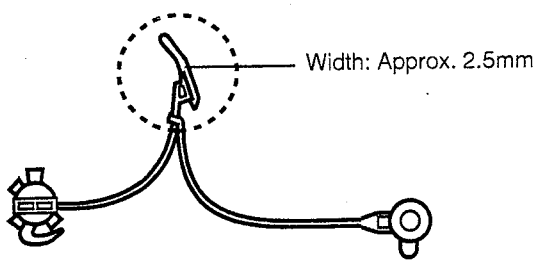
Distinction: You can distinguish by the existence of the step.

NOTE: The following parts are can't distinguished by the external appearance.

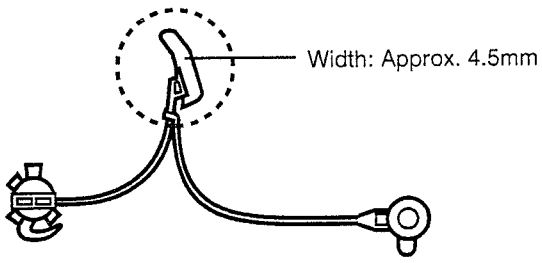
- CLUTCH GEAR S ASS'Y and CLUTCH GEAR S (S) ASS'Y
- CLUTCH GEAR S (VP) ASS'Y and CLUTCH GEAR S (VPS) ASS'Y

So before repairing, please identify each parts by referring to the Parts List and Parts No. of Service Manual.

NAME: AHC ASS'Y
PART NO.: S5-OA5-000-130
MATERIAL COLOR: WHITE



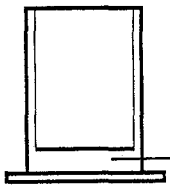
NAME: AHC ASS'Y (2)
PART NO.: S5-OA5-000-200
MATERIAL COLOR: GRAY



Distinction: You can distinguish by the material color and shape in the dotted circle.

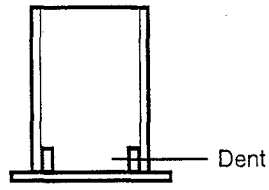
NAME: CAM PINCH ROLLER
PART NO.: S5-OP4-004-330
MATERIAL COLOR: WHITE

Cross Section



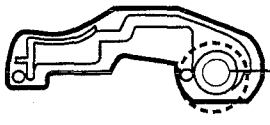
NAME: CAM PINCH ROLLER (PB)
PART NO.: S5-OP4-004-300
MATERIAL COLOR: GRAY

Cross Section

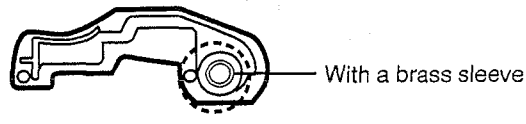


Distinction: You can distinguish by the material color and the dent.

NAME: P5 ARM ASS'Y
PART NO.: S5-OA4-001-200

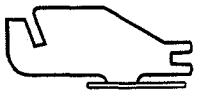


NAME: P5 ARM ASS'Y (PB)
PART NO.: S5-OA4-001-680

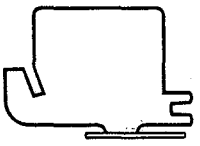


Distinction: You can distinguish by the shape in the dotted circle.

NAME: CATCHER P5 2
PART NO.: S5-OP4-004-020

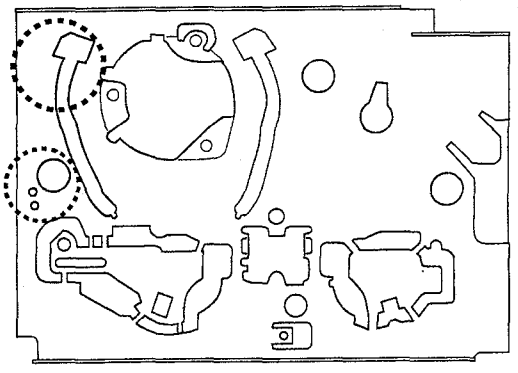


NAME: CATCHER P5 (VP)
PART NO.: S5-OP4-004-460

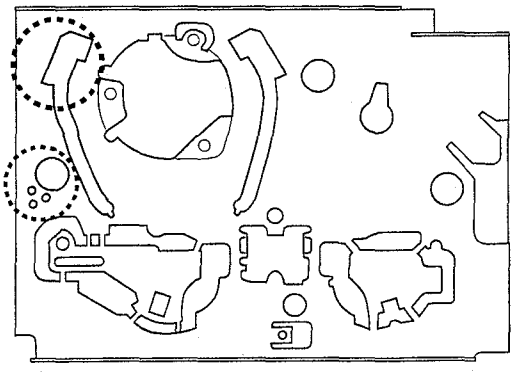


Distinction: You can distinguish by the shape.

NAME: MAIN CHASSIS ASS'Y
PART NO.: S5-OA0-001-730, S5-OA0-002-210,
S5-OA0-002-220, S5-OA0-002-290 or
S5-OA0-002-310



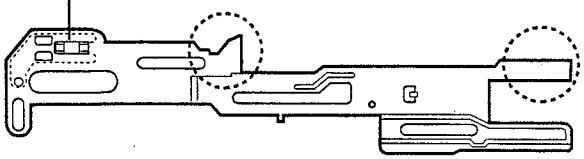
NAME: MAIN CHASSIS ASS'Y
PART NO.: S5-OA0-002-270, S5-OA0-002-260 or
S5-OA0-002-300



Distinction: You can distinguish by the shape in the dotted circle.

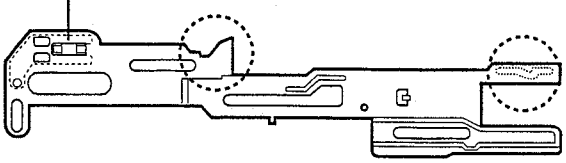
NAME: ROD, MAIN ASS'Y
PART NO.: S5-OA6-001-760

RATCHET PLATE (Back Side)

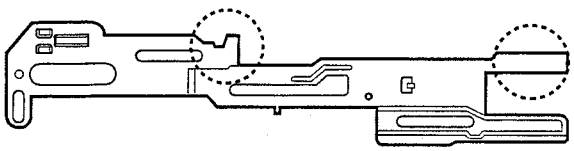


NAME: ROD, MAIN (S)
PART NO.: S5-OA6-001-810

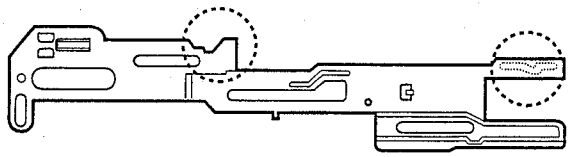
RATCHET PLATE (Back Side)



NAME: ROD, MAIN (VP)
PART NO.: S5-OP6-005-270

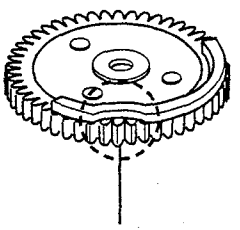


NAME: ROD, MAIN (VPS)
PART NO.: S5-OP6-005-380



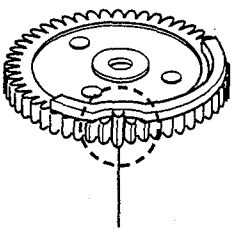
Distinction: You can distinguish by the shape in the dotted circle.

NAME: CAM, P5
PART NO.: S5-OP4-003-440



All teeth are the same height.

NAME: CAM, P5
PART NO.: S5-OP4-004-500



Only one tooth is high.

Distinction: You can distinguish by the tooth height of circled section.

サービス技術ニュース	
番号	連絡内容
G－　－	
G－　－	
G－　－	

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Tokyo Japan

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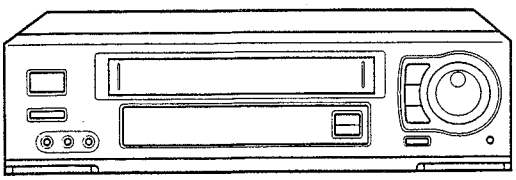
Printed in Japan

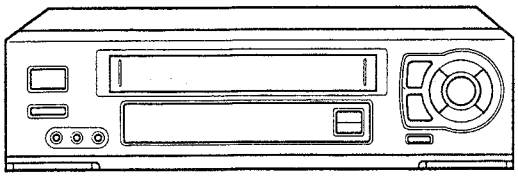
aiwa

aiwa SERVICE

HV-FX5000
HV-FR30



FX5000



FR30

STEREO VIDEO
CASSETTE RECORDER

• BASIC TAPE MECHANISM: OVD-5 • TYPE: U (FX5000) , D (FR30)

MODEL CODE : 87JF3-0137(S)

SERVICE MANUAL

SUPPLEMENT

このサービスマニュアルは、HV-FR30との変更部分についてのみ載せています。
共通部分については、HV-FR30（S/M Code No. 09-978-200-60O）のサービス
マニュアルを参照して下さい。

This Service Manual contains information about the difference between HV-FX5000 (TYPE: U) .
If requiring the other information, see Service Manual of the HV-FX5000 (TYPE: U)
(S/M Code No. 09-977-197-30O).

S/M Code No. 09-978-220-70O

ELECTRICAL REPLACEMENT PARTS LIST

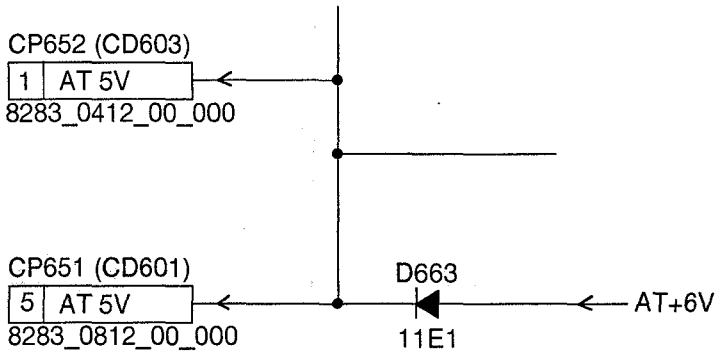
(HV-FX5000)

Alteration of PCB

REF. NO.	(OLD)		(NEW)	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
D519	S2-8XE-QS0-400	DIODE,11EQS04TA2B5	S2-8TE-QS0-400	DIODE,11EQS04TA1B2
D663		———	S2-8T0-11E-100	DIODE,11E1TA1B2

OPERATION SCHEMATIC DIAGRAM

(HV-FX5000)



ADD D663
DEL W873

DIFFERENCES

(HV-FX5000/HV-FR30)

Change of REF. NO.

(OLD)	(NEW)
REF.NO.	REF.NO.
C4220	C4208
C4221	C4210

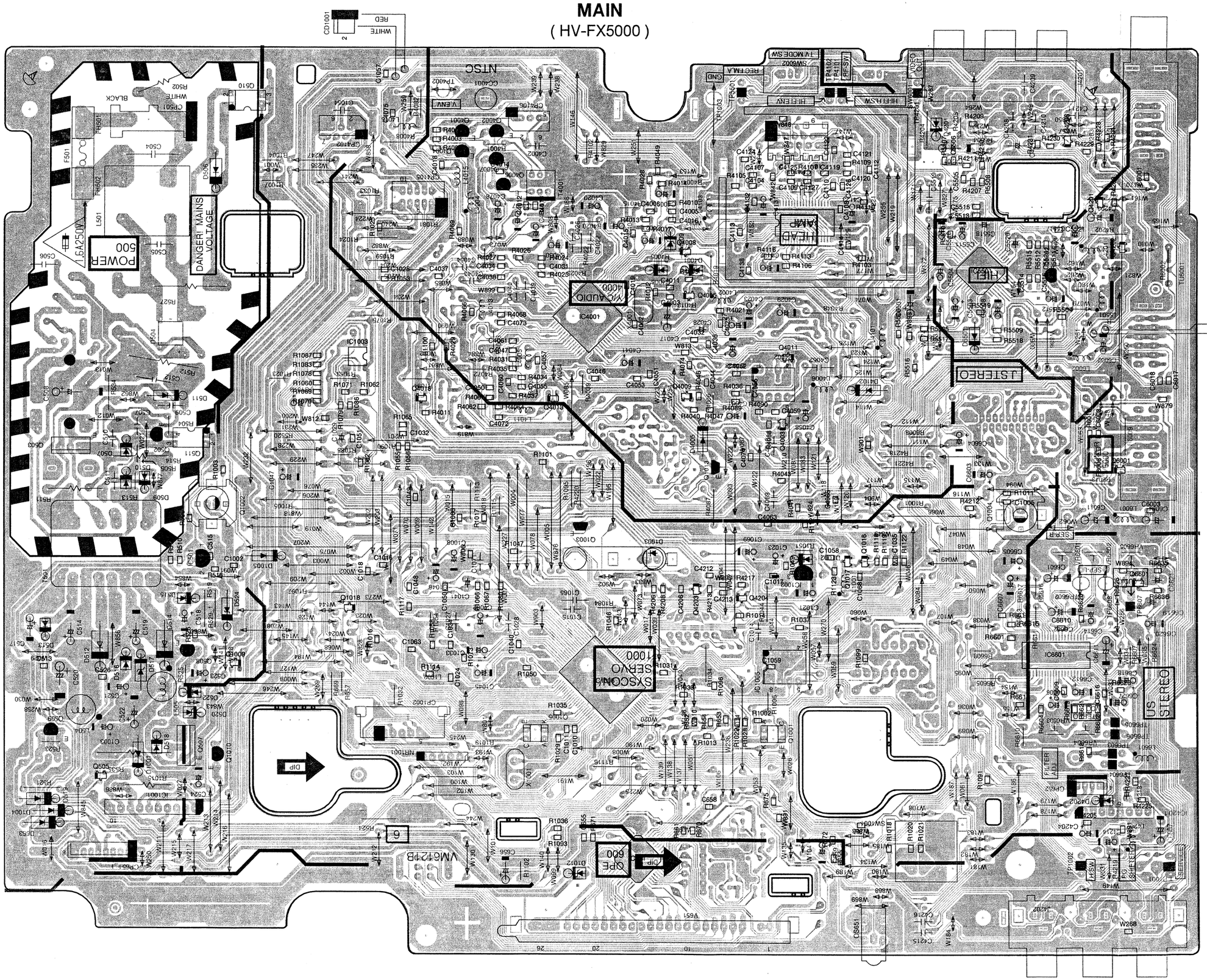
電気部品表

(HV-FR30)

メイン基板変更の為

REF. NO.	(OLD)		(NEW)	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
D519	S2-8XE-QS0-400	DIODE,11EQS04TA2B5	S2-8TE-QS0-400	DIODE,11EQS04TA1B2

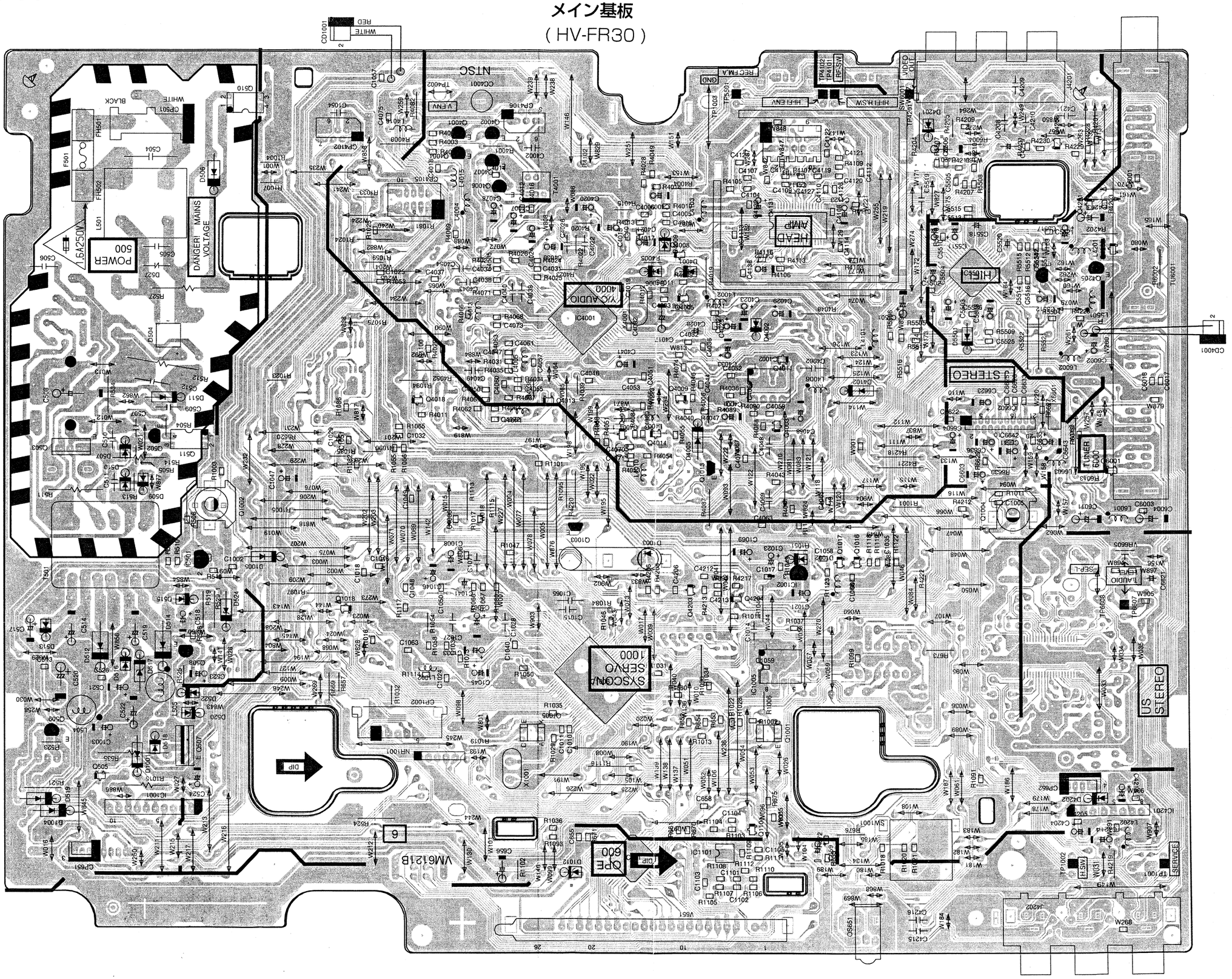
PRINTED CIRCUIT BOARDS
MAIN
(HV-FX5000)



3 4

基板部品配置図

メイン基板
(HV-FR30)



5 6